

The Genesis of Premenstrual Syndrome

by

Bianca Zietal

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Science

Approved April 2016 by the
Graduate Supervisory Committee:

J. Benjamin Hurlbut, Chair
Jennifer Dyck Brian
Jason Robert

ARIZONA STATE UNIVERSITY

May 2016

ABSTRACT

This is a project about medicine and the history of a condition called premenstrual syndrome (PMS), its “discovery” and conceptual development at both scientific and socio-cultural levels. Since it was first mentioned in medical literature, PMS has been explored empirically as a medical condition and conceptually as non-somatic cultural phenomenon. Many attempts have been made to produce scientific, empirical evidence to bolster the theory of PMS as a biological disease. Some non-medical perspectives argue that invoking biology as the cause of PMS medicalizes a natural function of the female reproductive system and shallowly interrogates what is actually a complex bio-psycho-social phenomenon. This thesis questions both sides of this debate in order to reveal how criteria for PMS were categorized despite disagreement surrounding its etiology.

This thesis illustrates how the concept of PMS developed and was informed by the discovery of hormones and the resulting field of endocrinology that provided a framework for conceptualizing PMS. It displays how the development of the medical diagnostic category of PMS developed in tandem with the emergence of the field of endocrinology and was legitimized and effectively medicalized through this connection. The diagnosis of PMS became established though the diagnostic techniques like questionnaires in spite of persistent disagreement over its definition. The thesis shows how these medical concepts and practices legitimated the category of PMS, and how it has become ubiquitous in contemporary culture.

ACKNOWLEDGMENTS

As the saying goes, “it takes a village to raise a child,” so too does it take a village to write a thesis. I am forever grateful to many wonderful people who supported me along the way and listened I recounted the findings of my research. At social gatherings I frequently found myself in conversations with people sincerely interested to learn the history behind PMS and eager to discuss their own experiences and opinions about how menstruation is culturally portrayed. During my most weary points, it was their eagerness to hear the story that kept me motivated to tell it.

I would like to thank Jane Maienschein for believing in me so early on and introducing me to many academic opportunities. It is due to her believing in my potential that I pursued a graduate degree in the first place.

I would like to thank Ben Hurlbut for being an incredible mentor whose breadth of knowledge and ability to communicate difficult subjects with eloquence, grace and humility has inspired me from the very beginning. It was through his courses that I was first introduced to bioethics and encouraged to examine medical and scientific knowledge with a critical and historically informed gaze. His guidance has helped make me a more critical thinker and better communicator. I am grateful to Ben for his dedication to his students and superhuman patience. His re-assurance throughout my academic career has helped me believe in my ideas and myself.

I also thank Jason Robert for his mentorship, amiability and eagerness to share reading material and exciting opportunities with me. And although time did not permit for more mentorship, I would like to thank Jennifer Brian for proving me with interesting reading material that informed my theoretical perspective for this project.

I would also like to acknowledge Christine Stevenson, who spent many hours providing critical and insightful feedback on my drafts. More importantly, I must thank her for her delightfully absurd sense of humor, beautiful mind, and wonderful friendship.

I would also like to thank Christina Collier for providing her copyediting skills and helping to make my often-verbose language readable to other humans. Without her friendship and encouragement, I would not have been able to complete my thesis.

I would also like to thank Erica Hervig and Grishma Singh for a near decade of friendship and for providing a regular reminder of what life was like before I started graduate school. Their love and support has helped keep me grounded and given me the strength to continue writing.

Lastly, I would like to thank my parents and brother for understanding my recent hermitude and for helping me to not take life too seriously as I spent hours overthinking everything.

TABLE OF CONTENTS

CHAPTER	Page
1. INTRODUCTION.....	1
What is PMS?.....	3
Disease Crystallization.....	7
2. HORMONES.....	13
Discovery.....	13
Dr. Robert T. Frank.....	17
Dr. Katharina Dalton.....	22
i. Menstrual Questionnaires.....	30
ii. Controversy and Official Codification.....	38
3. THEORETICAL FRAMING.....	42
PMS as a Culture Bound Condition.....	46
Social Constructionism Meets Feminist Analysis.....	48
i. Media Representation.....	50
4. CONCLUSION.....	59
REFERENCES.....	66

INTRODUCTION

Have you ever been sitting at your desk at work, or getting a cup of coffee, and heard someone around you say, “I’m PMS-ing right now”? Perhaps you’ve also witnessed those three letters used to subdue someone mid-argument? Or maybe walked by one of those novelty stores selling joke items with sayings like, “I have PMS and a handgun, any questions?” It’s also likely that you’ve heard “hormones” invoked in similar contexts and used interchangeably with PMS. This variety of uses suggests that popular culture understands PMS as something that makes for a good joke or serves to explain a negative change in a woman’s behavior. However, relatively few people know that PMS has an official place as a medical diagnosis. The medical perspective has played a major role in influencing how people conceptualize PMS today; in fact, the name was coined within the medical field, as was the hypothesis that hormones caused it. Fewer people are aware that PMS and its supposed hormonal imbalance has been used as a medical legal defense for women charged with a variety of crimes.¹ Though what PMS is exactly remains intangible and indefinable, to an extent what it is really depends on whom you ask. The closest explanation may be that PMS stands as the representative term for some symptoms, or a general feeling of icky-ness that women experience around the time they menstruate. But at the same time it is a contested medical and social explanatory resource that allows people to externalize their own and other’s negative experiences.

The issue with this vague understanding of PMS lies in its current applications, both medical and social.² From a medical perspective, PMS is included as a diagnostic category in the tenth edition of the International Statistical Classification of Diseases and Related Health Problems (ICD) with its more “severe” version, Premenstrual Dysphoric

¹ Loes Knaapen, George Weisz. "The biomedical standardization of premenstrual syndrome ." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008):120–134.

² This is a false dichotomy because medicine, as will be discussed later, is a social enterprise.

Disorder (PMDD), included in the Diagnostic and Statistical Manual for Mental Disorders (DSM). It's official placement as a medical category is questionable, however, because up to 300 symptoms have at one point been associated with it, making it an extremely unwieldy diagnostic category with a mass of symptoms linked together purely by timing. One issue with having PMS built on so many symptoms is that the category loses it's utility as a diagnostic tool. Another issue with PMS is that it runs the risk of pathologizing a natural bodily function in healthy females, thus perpetuating the historical notions of women being at the mercy of their reproductive systems.³ Thus, the usage of the term PMS in the modern vernacular, whether in earnest or jest, to refer to some experiences of menstruating women, shows how hegemonic constructions of the feminine still influence Western society today. The pathologization of PMS validates and perpetuates sexist notions by essentially acknowledging that womens bodies rule them once a month. This is harmful in society today because it has been, and continues to be entertained as a legitimate, medical reason why women cannot or should not be permitted to work in certain fields or hold specific responsibilities.⁴

In order to begin to understand PMS in medical and social terminology today, it is necessary to approach the subject from a historical perspective. In this thesis I trace the development of the medical diagnostic category of PMS by first showing how PMS was legitimized by linking it with the newly discovered category called hormones. Next, I show how the condition was reified and stabilized through the use of diagnostic techniques like questionnaires, despite significant and persistent disagreement over

³ For most of the history of Western medicine, the male form has been representative of human anatomy with the female form regarded as the "other". The reproductive organs served a main point of difference. Female reproductive organs were thought to exert greater influence on her anatomy than male reproductive organs did on his anatomy.

⁴ Carmon, Irin. *Donald Trump draws on long history of period stigma*. 08 10, 2015. <http://www.msnbc.com/msnbc/donald-trump-draws-long-history-period-stigma> (accessed 05 03, 2016).

what exactly “PMS” referred to. Nevertheless, I reveal how the category of PMS has become ubiquitous in modern life, and is widely used to describe and explain feminine experiences/behaviors. By analyzing the history of PMS, I show that it developed in tandem with the emergence of the term “hormone” and the subsequent development of the field of endocrinology, thus becoming medicalized. With the discovery of hormones, conditions of the female reproductive system came to be associated with specific somatic hormonal fluctuations. Hormones provided a new language with which to understand, test for, and treat conditions related to the reproductive system. Symptoms and conditions that previously bore different names and were not effectively treated due to a lack of specificity in description of the ailment, could now be legitimized in terms of hormones and receive more focused treatment.

There are many avenues through which PMS has been investigated. For the purpose of this project however, I will primarily focus on the hormone causation theory of PMS because it was the first medical theory and had and continues to hold influence over how medical professionals and others understand menstruation and problems associated with the cycle. Hormones are frequently used as a scapegoat for explaining away symptoms or behaviors and are alluded to this way in the media, despite lack of evidence.⁵ I will dispute the value of PMS as understood as a valid medical and social term on the grounds that it has become too much of a catchall term oversimplifying certain experiences of women.

What is PMS?

The question of what is PMS has no single answer. Depending on who you ask you will receive a slightly different reply. In the broadest definition, PMS is described as

⁵ Caplan, Paula J., Caplan, Jeremy. *Thinking Critically about Research on Sex and Gender*. New York: Routledge, 2016.

a collection of physiological and psychological changes that begin around one to two weeks before the onset of the menstrual period.^{6,7,8,9} These changes have numbered into the hundreds and have been largely contradictory, including both positive and negative changes such as arousal and depression.^{10,11} Since it was first coined in medical and psychological literature in 1931^{12, 13}, the condition has been studied and scrutinized by medical experts, psychologists, sociologists, and feminists. It is partly because of these discussions that PMS became stabilized as a concept of disease, despite the fact that what “it” is remains contested to this day. The search for a biological explanation for PMS has been full of contradictory findings and other avenues of inquiry, namely those of psychology and sociology, have proposed alternate theories of causation. One critique suggests that PMS is a socially constructed condition directly pathologizing the

⁶ Dept. of Health and Human Services Office on Women's Health . *Premenstrual Syndrome*. 12 30, 2015. <https://www.nlm.nih.gov/medlineplus/premenstrualsyndrome.html> (accessed 02 06, 2016).

⁷ Richardson, John T. E. "The Premenstrual Syndrome: A Brief History." *Soc. Sci. Med.* 41, no. 6 (1995): 761-767.

⁸ Staff, Mayo Clinic. *Premenstrual Syndrome (PMS)*. 12 14, 2014. <http://www.mayoclinic.org/diseases-conditions/premenstrual-syndrome/basics/definition/con-20020003>.

⁹ Chrisler JC, Caplan P. "The strange case of Dr. Jekyll and Ms. Hyde: how PMS became a cultural phenomenon and a psychiatric disorder." *Annu Rev Sex Res* 13 (2002): 274-306.

¹⁰ Moos, Rudolf H. "The Development of a Menstrual Distress Questionnaire." *Psychosomatic Medicine*, 1968: 853-867.

¹¹ Knaapen, Loes, Weisz, George. "The biomedical standardization of premenstrual syndrome ." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008): 120–134 .

¹² Frank, Robert T. "The Hormonal Causes of Premenstrual Tension." *Arch NeurPsych.* 26, no. 5 (1931): 1053-1057.

¹³ Horney, Karen. "Die pramenstruellen Verstimmungen. ." *Zeitschrift fur Psychoanalytische Padagogik* 5 (1931): 1-7.

menstrual cycle, making a natural bodily function experienced by fertile human females into an illness, and in extreme cases an excuse for negative emotions or deviant behavior.^{14, 15} Despite the multiplicity of perspectives inquiring into PMS, the biological explanation of “hormones” is the most referenced in both medical, non-medical and cultural texts. PMS is simultaneously a disease concept and a concept that people commonly use to describe their own state of being or to explain negative mood or behavior in others. When it was first written about in medical literature, PMS described a collection of mostly physical symptoms.¹⁶ Gradually, as the number of symptoms associated with the condition increased, negative affect joined the definition.

In today’s pop-culture media, negative affect is frequently used synonymously with PMS to explain a female character’s unfavorable behavior or reaction. The gendered nature of PMS and the way people talk about it have implications for how the female body and femininity are understood and related to in society. This also influences how individual women regard their bodies and understand themselves. For this reason, PMS is an exemplary case to examine the particular ways that the normal vs. the pathological are constructed in contemporary biomedical culture. This has significant implications both for how the body is known and approached in medicine, and how social experiences are made to fall within the authority of medicine, thus becoming medicalized.

Throughout history, biological differences between bodies have been characterized in

¹⁴ Chrisler, Joan C., Gorman Rose, Jennifer, Dutch, Susan E., Sklarsky, Katherine G., Grant, Marie C. "The PMS Illusion: Social Cognition Maintains Social Construction." *Sex Roles* 54, no. 5 (2006): 371-376.

¹⁵ Laws, Sophie, Hey, Valarie, Eagan, Andrea. "Seeing Red: The Politics of Pre-Menstrual Tension." (Hutchinson Educational) 1986: 96.

¹⁶ Frank, Robert T. "The Hormonal Causes of Premenstrual Tension." *Arch NeurPsych.* 26, no. 5 (1931): 1053-1057.

ways that reflect social sensibilities. For this reason, the connection between biology and sex as well as gender and sociology are worth interrogating because they are significant factors influencing medicalization.

According to sociologist Peter Conrad, all diseases are socially constructed and imbued with meanings to some degree or another.¹⁷ Following from this, in regards to PMS, what matters, and what is at stake, is the influence it exerts in modern societies.¹⁸ Also, the consequences of disease definitions on the lives of individuals are tied with discussions about their intellectual and moral legitimacy. For example, standardizing medical care and providing insurance reimbursement requires that there be agreement on a diagnosis. From a Western moral perspective, if something is “not considered a disease then the sufferer may not be entitled to sympathy of others.”¹⁹ This is further exhibited in legal cases where a defendant may receive a reduced sentence for having committed a crime while under the duress of a medical condition or while taking a certain medication.²⁰ As will be shown throughout this project, the trajectory of PMS has followed this path. In this project, I briefly show how PMS came to be regarded as a disease concept despite contestation and will illuminate the effects of this crystallization down the line of history. I intend to reveal how while giving respite and empowerment to

¹⁷ Conrad, Peter, Barker, Kristin K. "The Social Construction of Illness Key Insights and Policy Implications." *Journal of Health and Social Behavior* 51, no. 1 (2010).

¹⁸ Reducing the body to its biological components bioessentializes all corporeal bodies, and in the case of PMS, it may reduce the female body to an inherently wonky endocrine and reproductive system. Bioessentializing women to their reproductive organs and endocrine system is risky in that it reduces them to their bodies and thus runs the risk of perpetuating gender stereotypes that could reduce their autonomy. As has been seen done in both professional literature and the media.

¹⁹ Rosenberg Charles E., Golden Janet. *Framing Disease: Studies in Cultural History*. New Brunswick: Rutgers University Press, 1992.

²⁰ Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006:4.

some individuals in the form of knowledge²¹, PMS as a disease category also echoed notions that inadvertently perpetuated stereotypes about the female body's influence on a woman.

Disease Crystalization

What is a disease? What causes a disease? Who suffers from a disease? How is a disease treated? All these questions can reveal the fluidity of the term “disease” and what constitutes it. What was once considered a disease may change depending on the context of the time, the place, the people and their cultures, as well as be impacted by science and technologies (especially, in this case, endocrinology and biochemistry). It is particularly for this reason that I think telling a history of an object of knowledge, such as PMS, can be useful in showing how it is multifaceted.

A disease is approached and made sense of by individuals with varying perspectives and methods (i.e. technologies, diagnostic instruments, surveys, etc.) operating within different disciplines. Ultimately, the disease becomes a product of their combined attempts and reflects either that collective vision or lack of vision. In regards to medical and scientific literature published on PMS, the disciplines that have the most pronounced facets include gynecology, psychology, and endocrinology, as well as epistemology. However, the knowledge produced within these disciplines develops within the near vacuum of each discipline.²² It yields results, but not necessarily the more balanced results that come with unified collaboration.

²¹ It must also be emphasized that how the (female) self knows herself refracts the social and moral commitments that are always already embedded in biomedical ways of knowing.

²² I use the term “vacuum” to describe the environment in which disciplines operate, using their own specialized tools, knowledge set, and lexicon to study and characterize a disease. For example, a psychologist and biochemist may be looking at the same condition, but they can only effectively do so with the tools they have at their disposal and not with each other's respective tool set. Biochemists and psychologists are not qualified to complete or judge each other's respective works and this reduces the success of interdisciplinary efforts. I contend that in approaching PMS

Although the influence of sociocultural factors on the definition of disease is well addressed in recent literature, most diseases are still commonly regarded as primarily independent from their subjective contexts. They are considered scientifically objective designations that people “catch” or develop, discrete entities that are (in most cases) well established and clearly defined. One must not neglect the fact that while a disease is often biological, it is also linked to a history that is not just limited to a series of names and dates, great inventions, events, or scientific experiments. Rather, a disease’s history transcends lifetimes and ideas, bridges current understanding and sometimes foreshadows future proceedings. The popular conceptual packaging of diseases often obscures their loaded histories, but these histories are absolutely critical for understanding what a given disease truly is and why it exists. According to science historian Charles Rosenberg, “[m]edicine, like the scientific disciplines to which it has been so closely linked in the past century, is itself a social system...every aspect of medicine’s history is necessarily “social,” whether acted out in laboratory, library, or at the bedside.”²³ Adopting this perspective, I aim to look beyond the medical discussion of PMS and acknowledge with some detail the sociocultural components essential to the making of the condition.

Western medicine has tended to explain diseases in terms of biology and chemistry. However, diseases are often established before an underlying scientific explanation is known. In these cases, the biological basis for the disease is sought in order to legitimize and understand it in terms that are acceptable to Western medicine.

from the perspective of different disciplines results may be inconsistent, and the facets end up being uneven. This is not to say that a multi-perspective approach is bad, but simply that it complicates and confounds the construction of the evolving disease product.

²³ Rosenberg, Charles E., Golden, Janet. *Framing Disease: Studies in Cultural History*. New Brunswick: Rutgers University Press, 1992:xiv.

Even in cases where diseases persistently elude biological explanation, doctors and scientists continue searching for explanations because the ever-expanding nature of science and medicine promises to provide new tools to help look for explanations in novel places. Diseases can remain in this state of explanatory limbo for long periods of time, during which their legitimacy—their “realness”—may not be questioned for as long as this inquiry continues.²⁴ This does not mean, however, that it is not worth asking the question of in what sense such a disease does exist—if not as a physiologically based pathology, then certainly in its own right as a concept of malady.

To shed light on this question, it is important to look at a disease’s past and ongoing history, including the non-somatic dimensions of disease designations. These include a complex network of actors (i.e. patients, medical experts, institutions, the pharmaceutical industry, etc.) that are involved in the discourse on a disease. This discourse is foundational to the sense in which a disease “exists” and the way that certain actors talk about disease and what diseases they talk about make a difference. It makes a difference in how those diseases as objects of knowledge become crystalized, thereby, becoming immutable facts influencing what people do about them. PMS is one such “disease,” that I will examine it in these terms.

As PMS took shape as a specific condition, it became an object of contestation where it was seen as harmful by some or an opportunity for empowerment by others seeking to place a name to their suffering and link their mysterious symptoms to a physical cause.²⁵ Thus, the contemporary understanding of the concept of PMS has origins inextricable from the experience of individuals, such as the patients and the

²⁴ The fact that it is a thing talked about in a way makes it real enough to talk about.

²⁵ Ussher, Jane M. "The ongoing silencing of women in families: an analysis and rethinking of premenstrual syndrome and therapy." *Journal of Family Therapy* 25 (2003): 388-405.

physicians that treated them. By understanding the origin of PMS, I will show how historical circumstances²⁶ allowed for it to come into being.

“The periodic hemorrhage of the human female – a perpetual cause of distress and suffering to her from its first appearance at puberty until its final disappearance at the menopause...has always been a physiological enigma both to her and to the opposite sex.”²⁷ – Raymond W. Bernard, *The Physiological Enigma of Woman: The Mystery of Menstruation*.

In considering the history of Western medicine from the time of the ancient Egyptians up to the 21st century, people with identical conditions or symptoms were often differentially diagnosed on the basis of sex.^{28, 29} There are doubtless physical differences between the sexes, however it would be naïve to assume that in the case of a gender specific condition such as PMS, perception of gender roles does not effect how the “condition” is considered. These cases show how, perhaps inevitably, a slanted perception of gender roles disproportionally influences how humans experience and treat disease. Cases in which gender roles are attributed to the exacerbation of a disease or certain symptoms are not few, and PMS is but one instance in the social history of medicine. As a native component to the female reproductive system, the menstrual cycle

²⁶ First, it was medically specified and made an object of study. Giving specificity to the concept of PMS had consequences. Feminist critics acutely aware of systemic historical neglect for women’s health concerns saw this newly specified condition as an example of people fighting past systemic neglect of medical attention for women’s health concerns, regarding the label as empowering, giving a name to their suffering and linking mysterious symptoms or behaviors to a physical cause that could be treated footnote.

²⁷ Bernard, Raymond W. *The Physiological Enigma of Woman: The Mystery of Menstruation Its Cause and Cure*. Pomeroy, WA: Health Research, 1999.

²⁸ Dixon, Laurinda S. *Perilous Chastity: Women and Illness in Pre-Enlightenment Art and Medicine*. Ithaca: Cornell University Press, 1995.

²⁹ Flemming, Rebecca. *Medicine and the Making of Roman Women: Gender, Nature, and Authority from Celsus to Galen*. Oxford: Oxford University Press, 2000.

is one of the female-specific characteristics that has been routinely surveyed and scrutinized for evidence of excessive influence on women's health.

Once shrouded in mystery, conflated with the phases of the moon and subjected to religious ritual³⁰, menstruation was routinely considered to be unlike any other biological function.^{31, 32} From the oldest existing medical texts^{33, 34}, to the peer reviewed scientific and medical journals of the twenty-first century, the menstrual cycle continues to be an object of study and a medically differentiating factor between the sexes transcending the functioning of the reproductive system. "Menstruation traverses class, race, sexual preference, politics, religion, and personal choice."³⁵ The near universality of menstruation and its critical connection to fertility and procreation make it a compelling subject for historical, social and feminist inquiry.³⁶

³⁰ Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006:7.

³¹ Rosewarne, Lauren. *Periods in Pop Culture: Menstruation in Film and Television*. Maryland: Lexington Books, 2012.

³² Laws, Sophie, Hey, Valarie, Eagan, Andrea. "Seeing Red: The Politics of Pre-Menstrual Tension." (Hutchinson Educational) 1986: 96.

³³ Stevens, JM. "Gynaecology from ancient Egypt: The papyrus Kahun: A translation of the oldest treatise on gynaecology that has survived from the ancient world." *The Medical Journal of Australia* 2 (1975): 949-952.

³⁴ Tasca, Cecilia, Rapetti, Mariangela, Carta, Mauro Giovanni, Fadda, Bianca. "Women And Hysteria In The History Of Mental Health." *Clin Pract Epidemiol Ment Health* 8 (2012): 110–119.

³⁵ Rosewarne, Lauren. *Periods in Pop Culture: Menstruation in Film and Television*. Maryland: Lexington Books, 2012:4.

³⁶ I emphasize the near universality of menstruation in females because it does not transcend age and individuals since there are women of the "right" age who may not have periods for one reason or another. These reasons could result from stress, diet, or exercise as well as something pathological with the reproductive organs.

There is a rich history to how some diseases women suffered from were causally attributed to the female reproductive system. The ancient Egyptians and Greeks believed general health problems, mental illness and deviant behavior of women were either directly caused by, or tacitly linked to, their reproductive organs.³⁷ Problems relating to the female reproductive system were sometimes dismissed as being part of “Eve’s curse”³⁸ or classified medically as a series of other nebulous disorders such as hysteria and neurasthenia that likewise had no fixed symptom set and known cause.³⁹ With refinements in anatomical knowledge, the thought that the reproductive organs exhibited a systemic influence was reduced to other substances such as hormones. For the first time in history, advancements in biochemistry allowed for novel diagnostic methods such as blood sample analysis, thus setting the precedent for the discovery of hormones. A general trend emerged that sought to explain the role of hormones in bodily processes, including the menstrual cycle. In particular, people sought to understand estrogen and progesterone and their respective fluctuations. Even as a physiological explanation for the menstrual cycle emerged, the reproductive organs and menstruation, particularly in extreme cases, continued to be referenced as an explanation for why women should not be admitted into higher education or participate in certain activities.⁴⁰

³⁷ Tasca, Cecilia, Rapetti, Mariangela, Carta, Mauro Giovanni, Fadda, Bianca. "Women And Hysteria In The History Of Mental Health." *Clin Pract Epidemiol Ment Health* 8 (2012): 110–119.

³⁸ Toufexis, Anastasia. "Coping with Eve's Curse." *TIME*, July 27, 1981: 59.

³⁹ Tasca, Cecilia, Rapetti, Mariangela, Carta, Mauro Giovanni, Fadda, Bianca. "Women And Hysteria In The History Of Mental Health." *Clin Pract Epidemiol Ment Health* 8 (2012): 110–119.

⁴⁰ Swaby, Rachel. The Godmother of American Medicine. April 8, 2015. <http://www.theatlantic.com/technology/archive/2015/04/getting-educated-does-not-make-women-infertile-and-other-discoveries-made-in-the-1880s/389922/> (accessed March 22, 2016). Edward Clarke, M.D., a professor at Harvard spoke in his 1872 book, *Sex in Education* that of “instances, and I have seen such, of females... graduated from school or college excellent scholars, but with undeveloped ovaries.” Suggesting that a women’s cognitive and reproductive ability were precariously linked.

Sources of ostensibly objective authority such as science or medicine are embedded within culture and Western culture had historically held certain social and moral views on women and their health. As this case illustrates, facts and discoveries from science and medicine are infused with these cultural influences and reify them, engraining them in modern thought. Thus, the history of the menstrual cycle reveals how the engrained attitudes toward women and ideas of femininity in western cultures has informed the scientific and medical products of these cultures, a point that will be elaborated upon further in the coming discussion.

In my first chapter I discuss the 20th century discovery of hormones and introduce how this created a fertile ground upon which PMS could be conceived. I follow its development as a medical diagnosis by surveying the work of individuals who were the first to document PMS and whose work led to it and its severe form PMDD, being included in diagnostic manuals. In this chapter I also highlight some discourse that questioned the validity, utility, and beneficence of the PMS diagnosis. In my second chapter, I dissect what I discussed in chapter one, using theories from the field of medical anthropology and sociology of science to inform my theoretical analysis. In this section I showcase how socially embedded notions of sex differences and gender roles influenced both medical specialists and the non-medical public in forming and understanding PMS.

HORMONES

Discovery

Prior to the field of endocrinology, people experimented with the idea that organs within the body communicated with each other. Before there was a term for things such as chemical messengers or hormones, midwives had figured out that the consumption of

animal organs and their extracts had some success in resolving health problems relating to female reproductive organs.⁴¹ This practice was called “organotherapy” and in the wake of the scientific revolution and the emergence of obstetrics and gynecology, came to be regarded as quackery.⁴² Despite midwives first using this practice, gynecologists are cited as the first to recognize how a body changed following the surgical removal of ovaries and speculated that the reproductive organ had a role in regulating the development of the female body. This technique allowed scientists to further develop what was in fact an old concept: chemical communication within the body.⁴³

As early as 1896, Viennese gynecologist Emil Knauer described the secretion of chemical substances by the ovaries.⁴⁴ In 1889, despite organotherapy being contested, French physiologist Charles-Edouard Brown-Sequard took it upon himself, quite literally, to provide empirical support for the practice. Inspired by the methods of midwives, Brown-Sequard prepared an elixir of dog and guinea-pig testicles which he self-administered in order to test for possible therapeutic effects.⁴⁵ Brown-Sequard reported his research at the Société de Biologie in Paris, claiming that upon consuming

⁴¹ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:18.

⁴² Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:18.

⁴³ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:19.

⁴⁴ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:19.

⁴⁵ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:18.

the concoction, he experienced an increased feeling of vitality and greater mental clarity.⁴⁶

Brown-Sequard's contributions to the theory of "internal secretions" essentially translated what the midwives and folk doctors practiced into terms that were considered scientifically reputable.⁴⁷ Despite some isolated experiments treating patients with animal extracts, little remained known about hormones. The field of biochemistry was likewise in an early developmental stage. It wasn't until the refinement of that field that scientists had the tools to link bodily processes with chemical communication and definitively characterize hormones. The hypothesis that certain tissues secrete important biochemicals was supported by research on patients who were successfully treated for certain conditions through the consumption of tissue extracts of pancreas, thyroid, and adrenal glands.⁴⁸ The fact that these tissue extracts were able to resolve patients' adverse symptoms led to the presumption that these tissues played an important role in chemical secretion.

The emergence of the concept of hormones inspired 20th century scientists to search for more of these chemical substances and understand their function. Interested in whether hormones controlled physical processes unmediated by nervous tissue, scientists transplanted the ovaries and testes from one part of an animal's body to another and found that the substances were still being excreted.⁴⁹

⁴⁶ In some ways, his methods are considered a precursor to Testosterone Replacement Therapy (TRT) offered at Low-T centers across the US.

⁴⁷ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:19.

⁴⁸ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:18.

⁴⁹ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:18.

During the late 19th and early 20th centuries, many researchers concentrated their efforts on identifying these internal messengers and the organs of their supposed origin. In 1905, Ernest Starling, a professor of physiology, together with his brother-in-law William Bayliss, gave the name “hormone” to an “internal secretion” he discovered in the digestive tract of a dog, called secretin.⁵⁰ Starling defined hormones as chemical messengers, “which speeding from cell to cell along the blood stream may coordinate the activities and growth of different parts of the body.”⁵¹

In the first decade of the twentieth century, sex endocrinology, or the study of sex hormones, became a major field of study. As historian of science Nelly Oudshoorn notes, physiologists were slow to pick up on the idea of internal secretions from the reproductive organs, possibly as a result of such material being taboo. However, following the turn of the 20th century, the territories of physiologists and gynecologists started to overlap. Although disorders related to the female reproductive system were primarily under the jurisdiction of the gynecologists, the newly introduced concept of sex hormones opened it up to the fields of endocrinology and neurology. Whereas gynecologists were particularly interested in the functions of the ovaries as the source of control over all kinds of disorders ascribed to ovarian malfunction, physiologists had a broader interest in the role of the ovaries and testes in the development of the body, including the brain, which led to the subsequent immersion of the field of neurological inquiry in regards to this subject.

Some ideas about human sex determination, and specifically the physiological role of the respective reproductive organs, included the idea that the organs possessed an

⁵⁰ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:18.

⁵¹ Tata, Jamshed R. "One hundred years of hormones." *EMBO Rep* 6, no. 6 (Jun 2005): 490-496.

“essence” which served to respectively feminize or masculinize the individual. Up until the 19th century, the uterus was believed to be the primary organ of influence in the female reproductive system but determining this was delayed because of technical problems in chemical analysis.⁵² In the 1910’s, biochemists had “neither the incentive nor the information” to enter into sex hormone research.⁵³ Following advances in organic chemistry in the late 1910s, the surgical approach of transplanting gonads was replaced by chemical extraction of substances from within the gonads. It was not until innovations in organic chemistry during the 1920s allowing for the extraction of lipids that it was possible to isolate individual hormones (which are, for the most part, lipid-soluble chemicals).⁵⁴ Sex hormones, classified as lipid steroids, could actually be extracted, purified and studied for the first time. With this purification capability, a door opened and physicians and scientists from various fields ventured across the threshold.

Dr. Robert Frank

In 1925, Robert T. Frank, a gynecologist at Mount Sinai Hospital in New York, adopted the concept of hormones and went on a search for “the female sex hormone.”⁵⁵ He was the first to publish a paper on premenstrual related tension⁵⁶ and was greatly involved in research and discourse on the subject of sex hormones. Frank, along with

⁵² Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:22.

⁵³ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:22.

⁵⁴ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994: 22.

⁵⁵ Frank, Robert T. "The Female Sex Hormone and the Gestational Gland." *JAMA* 84, no. 23 (1925): 1715-1719.

⁵⁶ Frank, Robert T. "The Hormonal Causes of Premenstrual Tension." *Arch NeurPsych* 26, no. 5 (1931): 1053.

other scientists, found an unknown substance concentrated in the blood and sought to determine its presence and fluctuations in the normal individual.

Scientists had decided that a female sex hormone was a substance that could restore the character or original function to an organism after removal of the ovaries by administering the hormone substance in question.⁵⁷ This delineation was important because some experiments had established that both sexes possessed the same sex hormones albeit in different concentrations. Frank suggested that the male body did not produce female sex hormones, and that instead they originated from food (it had been found in a variety of substances including animals and plants such as rice and sweet potato).⁵⁸ Despite criticism, the food hypothesis remained in consideration for explaining the presence of estrogen in males.

Between 1929 and 1930, research groups in Europe and in the US reported the isolation of chemical substances originating from the follicular fluid of the ovaries, which they named estrogenic hormones, or estrogen.⁵⁹ Now that they saw what the substance was, the belief that each sex had its own unique sex hormone reinforced the notion that sex was dualistic and that it was essentially determined by respective female and male hormones. However, experimental findings increasingly contradicted scientists' preconceptions, as it was found that testes had high levels of estrogen and that the

⁵⁷ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994.

⁵⁸ Frank, Robert T. *The Female Sex Hormone*. Springfield, Ill, 1929.

⁵⁹ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:22-23.

ovaries naturally produced testosterone. These observations contradicted the belief of the sexual specificity of the sex hormones.⁶⁰ Today it is known that the:

“sexes differ less in the identity of the hormones that are present than in their relative amounts – high levels of androgens and low levels of estrogens in males and the opposite in females. Another difference is that these hormones are secreted more or less continually and simultaneously in males, whereas in females, secretion is distinctly cyclic and the hormones are secreted in sequence.”⁶¹

In 1931, Frank went on to publish *The Role of the Female Sex Hormone*, building upon his previous work and that of others. At the point when this paper was published, the task of describing the role of the female sex hormones was becoming more complicated as other researchers determined how the pituitary gland in the brain affected the release of hormones. Frank mentions that the difficulty of analyzing hormone effects is largely due to the number of different things interacting:

“Yet a great majority of clinicians are satisfied to arrive at diagnoses, based on single predominant symptoms such as amenorrhea, oligomenorrhea, menorrhagia or metrorrhagia, due, as I shall show to a number of hormonal variations, without making any attempt to investigate the hormone contents of the body fluids and excretions, although methods for these hormonal determinations are now available. In other disciplines of medicine such neglect would be frowned on as, for example, the failure to determine the basal metabolic rate in thyroid disturbances...”⁶²

Here Frank was alluding to the neglect of female health concerns, something that he becomes more vocal about later when he further elaborates on premenstrual tension”

“While such products as thyroid substance, insulin and parathyroid produce striking and concordant results in appropriate cases, the opposite applies to even to the dew potent extracts used in the genital sphere. Our hopes have been

⁶⁰ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:24-25.

⁶¹ Saladin, Kenneth S. "The Female Reproductive System." In *Anatomy & Physiology THE Unity of Form and Function*, by Kenneth S. Saladin, 1096. New York: McGraw-Hill Education, 2015:1070.

⁶² Frank, Robert T. "The Role of the Female Sex Hormone." *JAMA* 97, no. 25 (1931): 1853.

dashed because of the fact that the potent female sex hormone does not cause the anticipated therapeutic results.”⁶³

Frank further explored the chemistry and physiological role of estrogenic compounds on physiology and disease (other research also disproportionately focused on the potential negative effects of estrogen but not so for testosterone (it is unclear why this was the case)).

In 1931, Frank published *The Hormonal Causes of Premenstrual Tension*. The paper features his patient case studies and experimental attempts at treating what Frank describes as “premenstrual disturbances of manifold nature,”⁶⁴ which women suffer from in varying degrees. Frank suggested there exists a tension due to an accumulation of sex hormone produced by the ovaries. To treat his patients, Frank proposed dehydration therapy (with ingestion of diuretics such as coffee or tea and calcium) in order to remove excess estrogens supposed to be causing the problems. When this therapy did not work, Frank treated patients by x-raying their ovaries⁶⁵, or in extreme cases surgically removing the ovaries.

Frank said that refraining from treating women with “high” levels of estrogen:

“may in labile persons produce serious symptoms, some cardiovascular, but the most striking definitely psychic and nervous (autonomic). These periodic attacks are incapacitating and lead occasionally to extreme unhappiness and family discord....I suggest that careful study of the changes occurring in the autonomic nervous system, particularly such reactions as lend themselves to accurate analysis, be undertaken by neurologists at the time of the cycle at which symptoms of tension are most manifest.”⁶⁶

⁶³ Frank, Robert T. "The Role of the Female Sex Hormone." *JAMA* 97, no. 25 (1931): 1854.

⁶⁴ Frank, Robert T. "The Hormonal Causes of Premenstrual Tension." *Arch NeurPsych* 26, no. 5 (1931): 1053.

⁶⁵ Thus killing the ovarian tissue.

⁶⁶ Frank, Robert T. "The Hormonal Causes of Premenstrual Tension." *Arch NeurPsych* 26, no. 5 (1931): 1055.

In this excerpt it can be seen that Frank was building upon the theory of a synergistic connection between hormones and the nervous system. This theory appeared with the emergence of “internal secretions,” but what is significant is that Frank openly invited other specialists to study the condition as well.

At the same time Frank was working on this, other investigators were taking their own approaches to female hormones and premenstrual tension. For example, in 1936, French researchers gave testosterone treatments to females experiencing PMS because they thought that Frank’s approach, with diuretic and dehydration treatment, was insufficient for what was then considered the hormonal basis for the PMS experience.⁶⁷ In the 1930’s and 1940’s, interest in isolating hormones and understanding their physiological effects remained as strong as ever. Both physicians and others saw hormones as powerful substances that could cause and cure a wide variety of illnesses. The novelty of the endocrine system and the diverse role of hormones attracted both physicians and non-physicians to the idea that maybe the medical conditions with unknown etiologies resulted from a hormone imbalance and that the cure lay in something as simple as hormone replacement therapy. Nine years after publishing his paper on premenstrual tension Frank reflected on this very trend:

“The tendency to consider every obscure condition endocrine in origin is now in fashion. This tendency is so great that frequently no attempt is made to exclude nonendocrine disturbances.”⁶⁸

He admitted his own readiness to jump on the metaphorical hormone train and reopened inquiry into some of the conditions that he had previously studied. He hinted that a hormonal basis to premenstrual tension might not have been the best approach to

⁶⁷ Knaapen Loes, Weisz George. "The biomedical standardization of premenstrual syndrome." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008): 124.

⁶⁸ Frank, Robert T. "The Sex Hormones Their Physiologic Significance." *JAMA*, 1940:1507.

the condition but stated that a search for a cause should still be pursued. Over the next several years, publications on premenstrual syndrome were limited while innovation in biochemical profiling and hormone assays grew exponentially. It wouldn't be until the 1950's and 60's that the subject of premenstrual related symptoms would be the subject of much attention and scrutiny.

Dr. Katharina Dalton

More than two decades after Frank published his premenstrual tension paper, Katharina Dalton, a British physician cited Frank's 1931 paper. She would be the one to develop his description of a mostly mild condition into a syndrome, and officially name it the premenstrual syndrome. To this day Dalton is considered one of the earliest, most prolific and widely cited writers on the subject. By looking at her publications on PMS, it becomes apparent that Dalton laid the groundwork for how premenstrual related symptoms would come to be understood and treated. It was her theory that a deficiency in the female sex hormone progesterone caused the symptoms and she resolved to remedy this deficiency with hormone replacement therapy using both natural and synthetic progesterone. She advocated for greater health literacy for women and published many books geared toward public audiences on the subject. According to sociologists Loes Knaapen and George Weisz, "her success in popularizing the condition [PMS] was due to formidable polemical abilities but was also a sign of the times."⁶⁹ Criticisms⁷⁰ of Dalton's theory and methodology abound, but despite these, her influence can still be seen in the medical and media understanding of the condition.

⁶⁹ Knaapen Loes, Weisz George. "The biomedical standardization of premenstrual syndrome." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008):124.

⁷⁰ Criticisms from the medical and scientific perspective are primarily focused on the methods Dalton used for her studies. Some of these criticisms will be explored later in this project.

Dalton graduated with a medical degree in 1948 and soon after served as a trainee general practitioner in a North London clinic.⁷¹ There she came to work on a patient case that inspired the trajectory of her entire career as a premenstrual syndrome expert. One of her frequent female patients reported experiencing asthma attacks during certain times of the month. Dalton, picking up on the pattern, reflected on her own experiences, recalling how while pregnant she never had her otherwise monthly migraine headaches.⁷² By this time, the field of endocrinology had a stronger presence in the medical community, and physicians in multiple fields were starting to consider how the recently discovered hormones factored into their respective practices. It may be no surprise then that Dalton, recalling the role hormones played in pregnancy, narrowed down on one sex hormone in particular: progesterone.

In women who experience a menstrual cycle, progesterone facilitates the growth of the endometrium, a nutrient rich tissue lining that creates a favorable environment for a potential pregnancy. Progesterone levels normally fluctuate throughout the menstrual cycle, decreasing significantly days before the onset of the period and stay elevated during pregnancy.⁷³ Aware of the falling progesterone level the week before menstruation, Dalton suspected that her patient's asthma attacks and her own migraines were linked to the decrease in progesterone. To test her theory, Dalton reached out to Dr. Raymond Greene, who had written on the occurrence of premenstrual migraine, and requested he provide clinical responsibility while she treated patients who suffered from

⁷¹ "Interview: Katharina Dalton, MD: Progesterone and Related Topics." *International Journal of Pharmaceutical Compounding*, Sept/Oct 1999: 1-11.

⁷² Oliver, Myrna. "Katharina Dalton, 87; First Doctor to Define, Treat PMS." *Los Angeles Times*, Sept 28, 2004: 1.

⁷³ Saladin, Kenneth S. "The Female Reproductive System." In *Anatomy & Physiology THE Unity of Form and Function*, by Kenneth S. Saladin, 1096. New York: McGraw-Hill Education, 2015.

what she deemed premenstrual occurring rhinitis (runny nose), asthma, and epilepsy, with progesterone.⁷⁴ With his agreement, Dalton began to document her patient's symptom profiles as well as retroactively analyze their medical charts, suspecting that certain symptoms were aggravated by a fluctuation or "deficiency" of the hormone progesterone during the menstrual cycle.

The study published in 1953 by Dalton and Greene, documented the observations and progesterone replacement treatments applied to eighty-four female patients, sixty-four of whom were Dalton's personal patients.⁷⁵ All of the patient cases reported various symptom attacks "during the premenstrual phase, during menstruation or ovulation, or at the time of a missed period, and all cases were symptom free at other times".⁷⁶ All cases included in the series experienced attacks during each of the last three menstrual cycles; thus any "chance coincidence" was eliminated. Patients were asked to record their symptoms on a monthly calendar. The symptoms that would recur each cycle were called "presenting" symptoms:

TABLE I.—*Symptoms*

Symptom	Presenting		Other		Total	
Headache ..	53	63.1%	5	6.0%	58	69.5%
Nausea ..	2	2.4%	23	27.4%	25	29.7%
Irritability ..	2	2.4%	3	3.6%	5	6.0%
Depression ..	1	1.2%	4	4.8%	5	6.0%
Lethargy ..	—	—	11	13.1%	11	13.1%
Vertigo ..	1	1.2%	8	9.5%	9	10.6%
"Rheumatism"	5	6.0%	9	10.6%	14	16.7%
Skin and mucosal lesions ..	9	10.6%	2	2.4%	11	13.1%
Oedema ..	1	1.2%	4	4.8%	5	6.0%
Rhinorrhoea ..	3	3.6%	3	3.6%	6	7.2%
Asthma ..	4	4.8%	—	—	4	4.8%
Epilepsy, petit mal ..	3	3.6%	1	1.2%	5	6.0%
„ grand mal ..	—	—	1	1.2%		
Mastalgia ..	—	—	2	2.4%	2	2.4%

⁷⁴ Dalton, Katharina. *The Premenstrual Syndrome and Progesterone Therapy*. London: William Heinemann Medical Books LTD, 1977:viii.

⁷⁵ Greene, Raymond, Dalton, Katharina. "The Premenstrual Syndrome." *British Medical Journal*, 1953: 1007-1014.

⁷⁶ Greene, Raymond, Dalton, Katharina. "The Premenstrual Syndrome." *British Medical Journal*, 1953: 1007-1014

Table I. Dalton and Greene's list of symptoms patients reported experiencing prior to menstruation⁷⁷

From among those patients who presented symptoms, she then selected individuals who reported more symptoms during the luteal phase of the menstrual cycle, when progesterone was at its lowest concentration. Dalton theorized that these patients were more impacted by the drop in progesterone and that the “deficiency” of the hormone had triggered negative symptoms. Her solution to this problem was to “correct” what she considered a deficiency with progesterone replacement therapy. At the time, progesterone and estrogen were already being prescribed to women in the form of oral contraception. They were also being used to treat hormonally connected conditions such as hirsutism⁷⁸, amenorrhea⁷⁹, and dysmenorrhea⁸⁰. These uses supported the idea that the two hormones were particularly powerful, so it may come as little surprise that progesterone treatment was embraced by Dalton as the cure-all for premenstrual symptoms. Patients with what Dalton and Greene deemed to be “mild to moderate” cases of PMS were given oral doses of ethisterone, a synthetic progesterone, one week before PMS symptoms were expected to begin.⁸¹ In cases where patients didn't respond to oral doses, Dalton and Greene administered intramuscular injections of natural progesterone.⁸² Dalton observed that most of the patients given progesterone injections experienced reduced premenstrual symptoms. Dalton referenced Frank's work while

⁷⁷ Greene, Raymond, Dalton, Katharina. "The Premenstrual Syndrome." *British Medical Journal*, 1953: 1007-1014:1008.

⁷⁸ Unwanted male-pattern hair growth in women.

⁷⁹ The abnormal absence of a period.

⁸⁰ The medical term for menstrual cramps.

⁸¹ Greene, Raymond, Dalton, Katharina. "The Premenstrual Syndrome." *British Medical Journal*, 1953: 1007-1014.

researching PMS and found little supporting evidence for the effectiveness of estrogen removal as a treatment for the condition. Also, referencing what her patients had written down in her questionnaire, Dalton argued that the symptoms of PMS included more than just the “tension” and the migraine headaches Frank had documented but also included asthma, irritability, fatigue, and depression. Recognizing the increased number of possible symptoms, Dalton proposed that the term syndrome, rather than tension be used to describe the condition and officially coined the term premenstrual syndrome.⁸³

The findings of the progesterone trial were subsequently published in *The British Medical Journal*. The question of whether or not estrogen and progesterone had a role in causing water retention (i.e. bloating) was likewise at the time widely discussed. Frank primarily thought that oestrogens caused water retention and triggered the resulting symptoms of PMS. Dalton said that oestradiol, regardless of its high or low level, had the potential to cause premenstrual-like symptoms but the “symptom causing” potential would only present itself when progesterone wasn’t present in adequate amounts.⁸⁴ Thus Dalton refuted the effectiveness of previous PMS therapies and instead advocated for using progesterone replacement therapy, insisting that PMS was a reproductive disorder with a physiological basis.

Following her 1953 publication, Dalton almost exclusively researched and treated PMS and other conditions she thought to be influenced by progesterone. The 1953 paper once again ignited a medical and scientific inquiry into menstrual-related problems; for example, one month after the publication of Dalton’s paper, physician W. S. Inman published a letter in the *British Medical Journal* reflecting on his 28 years of medical

⁸³ Greene, Raymond, Dalton, Katharina. "The Premenstrual Syndrome." *British Medical Journal*, 1953: 1007-1014.

⁸⁴ Greene, Raymond, Dalton, Katharina. "The Premenstrual Syndrome." *British Medical Journal*, 1953: 1007-1014.

practice, which brought up his observation that styes, eyelid cysts and appendicitis all seemed to occur in women before menstruation. He provided his own idea of why this was, reasoning “a subconscious or conscious anxiety” resulted when a woman “missed” a pregnancy and thus “failed to fulfill her destiny to ensure the continuance of the [human] race.”⁸⁵ Inman wasn’t the only fellow to emphasize the biological reproductive role of the female in connection with psychology or more broadly health problems. His reasoning reflected an antiquated and morally inflected, view that once a month the reproductive system ruled the psychology of women. The impact of socio-cultural beliefs such as these will be explored in full in the next chapter. Nevertheless, what is significant about Inman is that he used a psychological basis as the explanation for the physical ailments that afflicted his patients, whereas Frank and Dalton sought to understand the psychological and emotional symptoms of some patients on the basis of a physical origin for the symptoms they described. Those who insisted using science to find a physical cause were more forward thinking and perhaps this is why their words were well received by a populace looking for answers. However, for psychological-related problems a competing view was that:

“it is improbable that lack of one hormone is responsible for any psychiatric disorder and a replacement therapy is unlikely to be found. An endocrine disturbance is only one factor in an illness which can be regarded as a reaction between physical and psychological components; but it may be responsible for great difficulties in adjustment.”⁸⁶

Both Frank and Dalton acknowledged that there were multiple factors influencing symptoms, but Dalton remained particularly fixated on finding a single biochemical

⁸⁵ "Points from Letters: Premenstrual Syndrome." *Br Med J* 1, no. 4824 (Jun 1953): 1393.

⁸⁶ Hemphill, R.E. "Endocrine Treatment In Psychiatry ." *The British Medical Journal*, Feb 1955: 501.

cause for various negative, psychological states experienced by some patients at different times of the month.

In 1957, Dalton opened the world's first PMS clinic at the London University College Hospital.⁸⁷ It was through this clinic, and her other positions at the Department of Psychological Medicine at the University College Hospital in London, that Dalton consulted her patients and built her data set on PMS and developed the connection between PMS and behavior. Dalton was adamant in her suggestion that hormones and in particular the menstrual cycle could be linked to psychiatric illness. In her 1959 paper *Menstruation and Acute Psychiatric Illnesses*, Dalton reviewed the intake records of 276 patients who were admitted for an acute psychiatric episode. Following "custom" during intake the patients were asked to recall their last menstrual period to nurses, which Dalton then analyzed. She found that 46% of patients were admitted during their premenstrum or menstrum, a finding she called "disturbing" (Dalton, 1959, pg. 146).⁸⁸ However, if one were to step away from this statistic, the expected incidence is actually lower than what would otherwise be expected. If there are four weeks in a menstrual cycle, and menstruation occurs during one week, then there are three other weeks during which "premenstrual" symptoms could be reported. Dalton classified the week immediately preceding menstruation as the "premenstrual week" and she used data from both the premenstrual and menstrual phases of the cycle in this particular study. By combining this data, Dalton's statistic of 46% incidence rate was skewed because by her definition there would always be a 50% chance of the women admitted experiencing

⁸⁷ Oliver, Myrna. "Katharina Dalton, 87; First Doctor to Define, Treat PMS." *Los Angeles Times*, Sept 28, 2004: 1.

⁸⁸ Dalton, Katharina. "Menstruation and Acute Psychiatric Illnesses." *Br Med J* 1, no. 5115 (1959): 148-149.

these symptoms, since fertile women are in these phases of the cycle 50% of the time.⁸⁹ Furthermore, the incidence rate should actually be 4% higher because she reported data from both menstrual and premenstrual weeks as incidence for PMS. In addition, Dalton approached the study with a preconception that she would find PMS to be the reason for the psychological issues the women in the psychiatric ward experienced; she directly correlated the experiences of these women with the timing of their menstrual cycle as reported by patients and nurses. Regardless, Dalton insisted that whether acute psychiatric episodes were directly caused or triggered by hormonal fluctuations during the menstrual cycle, treating admitted patients suspected of being on that part of their cycle with progesterone was highly recommended since “hormone therapy [was] not contraindicated by other psychiatric treatment.”⁹⁰

Over the next decade Dalton’s research interests shifted toward the influence of PMS on behavior, psychology, and the law. Gradually, Dalton’s research on PMS strayed farther from her insistence that the condition was primarily physiological as it included more symptoms and deviant behaviors in the category. In several of her papers, Dalton suggested that PMS could lead to severe enough behavioral changes that led women to commit crimes.^{91,92} However, she never explained the supposed physiological connection.⁹³ In 1961, Dalton published a paper on menstruation and crime where she

⁸⁹ Dalton, Katharina. "Menstruation and Acute Psychiatric Illnesses." *Br Med J* 1, no. 5115 (1959): 148-149.

⁹⁰ Dalton, Katharina. "Menstruation and Acute Psychiatric Illnesses." *Br Med J* 1, no. 5115 (1959): 149.

⁹¹ Dalton, Katharina. "Menstruation and Acute Psychiatric Illnesses." *Br Med J* 1, no. 5115 (1959): 148-149.

⁹² Dalton, Katharina. "Menstruation and Crime." *Br Med J* 2, no. 5269 (Dec 1961):1752-3.

⁹³ Dalton observed that there was no difference in hormonal levels between women who did and did not exhibit premenstrual symptoms.

administered surveys to newly convicted women over the course of six months in which she recorded their age, number of pregnancies, menstrual cycle details, and whether they reported PMS symptoms before or during menstruation. Dalton observed that nearly half of those prisoners committed crimes before or during their menstrual periods and believed this correlated to fluctuations in progesterone.⁹⁴

Menstrual Questionnaires

In the decade following Dalton's PMS 1961 publication, other researchers started looking at the disorder with greater verve. However, since no measurable somatic marker had been detected, many medical professionals depended entirely on their patients reporting their symptoms and created questionnaires to keep track. Consequently, the multiplicity of questionnaires with different listed symptoms meant that there was no standardization. The rates of incidence could not be adequately measured because there was no set symptomology for PMS and were further complicated by the fact that all reported symptoms were correlated with timing. This left an open door, so to speak, for the diagnosis of the syndrome because timing alone was essentially all that was needed. Dalton mentioned symptoms that included water retention, asthma and headaches. However, as she had her patients fill out her questionnaire, she found that more and more symptoms occurred during the week's preceding and after the premenstrual week. This lack of specificity of symptoms and timing made it extremely difficult to define the condition of PMS. In attempt to remedy the issue of inconsistency and non-specificity, Rudolf H. Moos, working in the Department of Psychiatry at the Stanford University School of Medicine, developed the

⁹⁴ Dalton, Katharina. "Menstruation and Crime." *Br Med J* 2, no. 5269 (Dec 1961): 1752-3.

Menstrual Distress Questionnaire (MDQ), which he thought would help stabilize the unwieldy PMS etiology.⁹⁵ His inspiration for creating the questionnaire was based in his observation that there was conflicting symptomology between PMS texts, which he attributed to a lack of consistency between the sample population, study methods employed, and the personal interests of the physicians involved. At the time, physicians inquiring into the condition created their own questionnaires, and each listed different amounts of symptoms to select from. In his own questionnaire, Moos groups a number of contradicting symptoms into eight distinct categories.

Moos justified the importance of identifying PMS on the grounds of other studies with questionable methods that provided evidence of a “large proportion of women who commit suicide or engage in criminal acts of violence and who as pilots have serious and fatal airplane accidents, do so during the menstrual or premenstrual cycle.”⁹⁶ The purpose of creating the MDQ was to make the condition more ‘objective’, and revealing of a potentially underlying hormone imbalance while also allowing for greater comparability among other studies. However, the MDQ was met with criticism by Dalton, who held the critical opinion that it was too psychologically oriented. Others found psychological and physiological research to only be scratching the surface of PMS with the wrong tools. Other tools of inquiry used by feminist psychologists emphasized how women’s health could be influenced by social and cultural elements.

Dalton and her theory of PMS were highly influential at a time when certain aspects about women’s health were still taboo and neglected. Dalton practiced and published her foundational works on the subject of PMS in the 1960s and 1970s, around

⁹⁵ Moos, Rudolf H. "The Development of a Menstrual Distress Questionnaire." *Psychosomatic Medicine*, 1968: 853-867.

⁹⁶ Moos, Rudolf H. "The Development of a Menstrual Distress Questionnaire." *Psychosomatic Medicine*, 1968: 865.

the time of the women's liberation movement, when traditional conceptions of sex and gender were being scrutinized intensely. In 1969, a group called the Boston Women's Health Collective (BWHBC), later called Our Bodies Ourselves, issued a pamphlet about women's health with the goal to empower and inform women about aspects of their bodies that in their opinion, the medical profession had neglected.⁹⁷ In the first publication, the women reported on a questionnaire they had sent out to women to gauge their experiences with the medical field and found that when it came to women seeking help "there were no "good" doctors and that [they] had to learn for [them]selves".⁹⁸ Finding such widespread dissatisfaction among women, the authors justified their pamphlet saying that it was "meant to be used by our sisters to increase consciousness about ourselves as women, to build our movement, [and] to begin to struggle collectively for adequate health care."⁹⁹ Intended to be a medical guide, the pamphlet was also filled with rhetoric of a highly political nature and provided a feminist critique of why women's health was lacking.

In terms of PMS, some feminist critics argued that it reduced women's experiences to their biology and pathologized a natural biological function. On the other hand, the medicalization of premenstrual related symptoms into a condition legitimized the experience of many women suffering from recurring monthly symptoms. Focusing on a potential biological connection helped elevate PMS to a medical and thus a more "respected", status. In the wake of greater discussions about the role of patients in their

⁹⁷ Boston Women's Health Collective. *Women and Their Bodies: A Course*. Boston: Boston Women's Health Collective, 1970.

⁹⁸ Boston Women's Health Collective. *Women and Their Bodies: A Course*. Boston: Boston Women's Health Collective, 1970:3.

⁹⁹ Boston Women's Health Collective. *Women and Their Bodies: A Course*. Boston: Boston Women's Health Collective, 1970:4.

healthcare, many women saw the attention being given to previously neglected topics as fresh. Empowered by greater knowledge about their bodies, women could better account for their own health experiences. The increasing presence of medical and scientific literature on PMS framed how some women came to understand their symptoms which led them to frame their experiences—and thus themselves—in particular ways. In this way the emancipatory women's health missions as heralded by the BWHBC, were double-edged. Although it encouraged women to be their own health advocate and *know* their own bodies it overlooked the fact that this knowledge was already peppered with particular terms and associations (i.e. neglected) that shaped their ways of knowing their *feminine* self. This is exemplified in both medical and cultural discourse on PMS that I will explore in the next chapter.

In a study conducted in 1974 on the MDQ and stereotypic beliefs about menstruation, researchers found that the way women reported their menstrual cycle symptoms was influenced by the format of the symptoms checklist and their “learned expectations and stereotypes about premenstrual suffering.”¹⁰⁰ Those retroactively self-reporting symptoms were found to more frequently provide a greater number of symptoms and overestimated accounts of their experience. More wildly, a 1977 study revealed the power of suggestion when women who were told they were premenstrual but were actually at different points in their cycle, self-reported more of the negative symptoms that would've been found in the premenstrum. This, they believed was due to learned female role expectations in a society that “discouraged expression of irritability or anger which could only surface under the guise of a medical condition.”¹⁰¹ A number of

¹⁰⁰ Knaapen Loes, Weisz George. "The biomedical standardization of premenstrual syndrome." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008): 125.

¹⁰¹ Knaapen Loes, Weisz George. "The biomedical standardization of premenstrual syndrome." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008): 126.

critical studies published throughout the 1970s continued to raise doubt about the validity of the qualitative methodology used to diagnose PMS as a hormonal condition, as a psychological condition, or that it was a culturally bound illness like hysteria. Several studies trying to replicate Dalton's findings showed that in double-blind controlled trials of progesterone treatment a placebo worked just as well as if not better than progesterone supplementation.^{102, 103}

As a result of the inconsistent findings, what to do in terms of recognizing PMS as a medical condition became increasingly polarized as experts sought to set standardized diagnostic practices and definitions about PMS while others supported its complete demedicalization. In the midst of all this contestation, PMS as an object of knowledge was being carved out and polished from different angles. Regardless of what people thought caused it, and thus what sort of etiology would be attached to it—physiological, psychological, social, etc., the disease entity was becoming established even though it was an object of disagreement. The sedimentation of a disease concept as such will be discussed in the following chapter.

In 1970, Dalton served as the first female president of the general practitioners section of the Royal College of Medicine and received the Migraine Prize from the Royal College of Practitioners in 1972 for her work linking migraine headaches to premenstrual syndrome.¹⁰⁴ This recognition buttressed her expertise on the subject of menstrual

¹⁰² Clare, A. W. "The Treatment of Premenstrual Symptoms." *British Journal of Psychiatry* 135 (1979): 576-579.

¹⁰³ Sampson, G. A. "Premenstrual syndrome: A double-blind controlled trial of progesterone and placebo." *British Journal of Psychiatry* 135 (1979): 209-215.

¹⁰⁴ Haines, Catharine M. C. "Dalton, Katharina Dorothea nee Kuipers." In *International Women in Science: A Biographical Dictionary to 1950*, by Catharine M. C. Haines, 383. Santa Barbara: ABC-CLIO, 2001.

related conditions and provided her contributions to the subject a greater weight. In addition to this professional recognition, Dalton gained public notoriety as a pioneering figure in women's health, open to writing for a general audience about what she considered tabooed and neglected subjects. Dalton's 1977 book, "Premenstrual Syndrome and Progesterone Therapy," illustrates her beliefs about the condition but also reveals instances where she adamantly insists that PMS is more than a series of changes that women normally experience, claiming that PMS is the "world's commonest, and probably oldest, disease."¹⁰⁵ The first line in her books states:

"Asthma, herpes, tonsillitis, acne, baby battering, epilepsy and alcoholic bouts may appear to have little in common. Nevertheless, in those cases in which there are regular recurrences during the premenstrum or menstruation, these symptoms all come within the classification of premenstrual syndrome and will respond to progesterone therapy. The common factor in these apparently unrelated symptoms is their recurrence, always at the same time, in each menstrual cycle."¹⁰⁶

Interestingly, in this excerpt Dalton lists other conditions and deviant behaviors as symptoms as falling under PMS. It is unclear whether Dalton believes that the natural decrease in progesterone before menstruation experienced by all fertile women is literally what causes these other conditions or if she means that PMS aggravates preexisting behaviors or behavioral issues. Furthermore, despite stressing the importance of timing in relation to a diagnosis of PMS, Dalton fails to establish and observe a concrete timeline regarding when the condition should manifest. This meant that the symptoms associated with the condition could only be determined and ruled out on the basis of when they occurred. In addition, the data does not list the sample size used to form Daltons observations regarding the additional symptoms (i.e. baby

¹⁰⁵ Dalton, Katharina. *The Premenstrual Syndrome and Progesterone Therapy*. London: William Heinemann Medical Books LTD, 1977: vii.

¹⁰⁶ Dalton, Katharina. *The Premenstrual Syndrome and Progesterone Therapy*. London: William Heinemann Medical Books LTD, 1977: 1.

battering) listed in the above quote, which draws into question the rate of incidence of each symptom. Because of this vagueness, Dalton set out to define PMS as a set of symptoms that recur in the weeks before menstruation but are absent in the weeks after menstruation. In order to be diagnosed Dalton requires that:

1. Symptoms occur exclusively during the second half of the menstrual cycle
2. Symptoms increase in severity as the cycle progresses
3. Symptoms must be relived by the onset of the full menstrual flow
4. There must be an absence of symptoms in the post-menstrual
5. Symptoms must have been present for at least three consecutive cycles¹⁰⁷

While Dalton was codifying her concept of PMS, a publication by Diane Rubel in the journal *Science* offered a reinterpretation of the condition. Rubel determined that, “women who were led to believe that they were premenstrual reported experiencing a significantly higher degree of several physical symptoms, such as water retention, than did women who were led to believe they were intermenstrual.”¹⁰⁸ The results of her study revealed the unreliability of patient symptom reports as a tool for diagnosing PMS, and she insisted that, “the magnitude of menstrual-related changes as well as their physiological basis”¹⁰⁹ be re-examined.

As studies showing inconsistencies in PMS definition and diagnostic methods mounted in the early 1980’s, Dalton’s career as an expert on the condition took an interesting turn. In 1980 and in 1981, Dalton served as an expert witness for the trials of three different women accused of arson, assault and manslaughter.^{110,111} The women

¹⁰⁷ Dalton, Katharina. *The Premenstrual Syndrome and Progesterone Therapy*. London: William Heinemann Medical Books LTD, 1977:10.

¹⁰⁸ Rubel, Diane N. "Premenstrual symptoms: a reinterpretation." *Science*, 1977:291.

¹⁰⁹ Rubel, Diane N. "Premenstrual symptoms: a reinterpretation." *Science*, 1977:291.

¹¹⁰ Loes Knaapen, George Weisz. "The biomedical standardization of premenstrual syndrome ." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008):120–134.

sought diminished responsibility for their crimes on the basis that they were suffering from PMS at the time they had committed them. As a result of Dalton's testimony, the women were given reduced sentences on the order that they be treated with progesterone. These trials gained worldwide media coverage and brought PMS out of obscurity as a condition discussed between individual women and medical professionals into a legal and social issue. The press from these trials brought about conversation regarding PMS and prompted increasing numbers of women, who saw that their collection of symptoms had a name, to go to their doctors and get treatment with hormone therapy. Some women formed groups intended to raise awareness about PMS.¹¹² Soon, privately owned PMS clinics conceptually similar to Dalton's UK practice emerged in the US, as did progesterone therapy, "much to the chagrin of gynecologists who viewed its use as 'unscientific' and 'commercial'."¹¹³ Furthermore, increased public interest in PMS made more physicians, sociologists, anthropologists, and philosophers turn their interests to the contested and controversial condition. Because of the controversy, PMS received media attention that cast the acronym onto the public front. A number of women who had been suffering from symptoms finally had a name to their mysterious condition. With the self-diagnosis of PMS many sought out Dalton and others specializing in PMS for treatment. Demanding that greater awareness be made for the condition, several women formed patient support groups. Meanwhile in the courtroom, the PMS defense continued to be used. Despite debate over its definition, diagnostic criteria, and legitimacy, the question of whether PMS was a disease category

¹¹¹ Oliver, Myrna. "Katharina Dalton, 87; First Doctor to Define, Treat PMS." *Los Angeles Times*, Sept 28, 2004:1.

¹¹² National Association for Premenstrual Syndrome in the UK and the National Association for Premenstrual Dysphoric Disorder in the United States are two examples.

¹¹³ Loes Knaapen, George Weisz. "The biomedical standardization of premenstrual syndrome ." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008):126.

in the first place was supplanted by questions of what went into the category. In the midst of this conflict over if and what kind of thing was PMS, it became codified as a concept. The establishing of PMS as a “thing” will be covered further in the second, theoretical chapter.

Controversy and Official Codification

Following these events in the United Kingdom, the conversation across the Atlantic in the United States, where the condition was first documented, was growing louder. There the conversation was no longer if PMS was a medical condition rather, what comprised it. In response to the greater attention and confusion over how to diagnose PMS, the National Institute of Mental Health (NIMH) in the US held a workshop in 1983 to finally determine diagnostic criteria for the condition. According to their established guidelines, in order for a woman to be diagnosed with PMS, she would have to show a 30% increase in symptom intensity during the premenstrual phase for two consecutive months. Two years later, an effort was made to include PMS into the third version of the Diagnostic Manual for Mental Disorders (DSM-III-R). The DSM is the primary diagnostic manual used by psychologists and psychiatrists in the United States and across the world as a model classification system for mental disorders. By including PMS in the DSM, individuals suffering from a mysterious set of symptoms finally had medically legitimate name for their condition. However its inclusion was contentious because it was seen as medicalizing both a normal physiological event and the psychological effects associated with societal expectations that women already experience and also stigmatized many women as being mentally ill.¹¹⁴ According the

¹¹⁴ Knaapen Loes, Weisz George. "The biomedical standardization of premenstrual syndrome." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008): 127.

Feminist Psychologist Jane Ussher, accepting PMS as a diagnostic category to “explain women’s distress, dysfunction, or deviance in the premenstrual phase of the cycle has had an impact beyond the clinical, with material consequence for women’s lives.”¹¹⁵ Categorizing PMS as a mental illness did not align with the views of many as it was seen as a blow to progress made in women’s rights and equality decades before. In a way the inherent nature of the female sex was threatened because PMS “reinforce[ed] the notion of the reproductive [female] body as a site of both madness and badness”¹¹⁶ from which women supposedly had no refuge or control over.

In 1987, as a settlement to the controversy, a more specific diagnostic category, Late Luteal Phase Dysphoric Disorder (LLPDD) took the place of PMS. LLPDD was considered as a “more severe” version of PMS with more acute symptoms of anxiety and depression that seriously interfered with work, usual social activities or relationships with others. This condition was included in the Appendix A “of the DSM-IV as a preliminary diagnosis requiring further study”.¹¹⁷ In order to be diagnosed with LLPDD, a woman had to present with at least five symptoms that appeared and disappeared between the early follicular and late luteal phase of their cycle. LLPDD, like its less severe version of PMS, was still identified by the timing of symptom onset. The reliability of using timing as the primary diagnostic criteria was just as problematic as it had been when Dalton proposed it.¹¹⁸ Seeing this limitation, a work group for the fourth edition of the DSM implored, like many had done for PMS, that there be a standardized rating

¹¹⁵ Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006:27.

¹¹⁶ Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006:27.

¹¹⁷ Knaapen Loes, Weisz George. "The biomedical standardization of premenstrual syndrome." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008):127.

¹¹⁸ Knaapen Loes, Weisz George. "The biomedical standardization of premenstrual syndrome." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008).

system created to “determine the true prevalence of the disorder in the general population of women, since previous studies suggested a prevalence ranging from 7% to 54% depending on study methods and diagnostic algorithms”.¹¹⁹ In an attempt to improve diagnostic accuracy, women were advised write down their symptoms and the severity of those symptoms every day in order to confirm timing and exclude individuals “with milder symptoms or premenstrual worsening of ongoing affective disorders”.¹²⁰ In 1994, LLPDD was renamed premenstrual dysphoric disorder (PMDD) and was also included in the appendix of the DSM-IV.¹²¹

Though it was included in the DSM many believed that “additional research was needed to confirm the distinctiveness of the diagnosis from other disorders, its true prevalence, and its specific criteria”.¹²² The formation of PMDD was an effort to isolate the psychological symptoms of irritability, depression and anxiety from the unwieldy category of PMS by dealing with them separately. However, the same empirical/diagnostic problems that were associated with PMS were passed over to PMDD. In 2013, the fifth edition of the DSM included PMDD as a “depressive disorder”

¹¹⁹ Epperson C. Neill, Steiner Meir, Hartlage S. Ann, Eriksson Elias, Schmidt Peter J., Jones Ian, and Yonkers Kimberly A. "Premenstrual Dysphoric Disorder: Evidence for a New Category for DSM-5." *Am J Psychiatry* 168, no. 5 (2012): 465–475.

¹²⁰ Epperson C. Neill, Steiner Meir, Hartlage S. Ann, Eriksson Elias, Schmidt Peter J., Jones Ian, and Yonkers Kimberly A. "Premenstrual Dysphoric Disorder: Evidence for a New Category for DSM-5." *Am J Psychiatry* 168, no. 5 (2012): 465–475.

¹²¹ Epperson C. Neill, Steiner Meir, Hartlage S. Ann, Eriksson Elias, Schmidt Peter J., Jones Ian, and Yonkers Kimberly A. "Premenstrual Dysphoric Disorder: Evidence for a New Category for DSM-5." *Am J Psychiatry* 168, no. 5 (2012): 465–475.

¹²² Epperson C. Neill, Steiner Meir, Hartlage S. Ann, Eriksson Elias, Schmidt Peter J., Jones Ian, and Yonkers Kimberly A. "Premenstrual Dysphoric Disorder: Evidence for a New Category for DSM-5." *Am J Psychiatry* 168, no. 5 (2012): 465–475.

with seven research criteria required for diagnosis.¹²³ Unsurprisingly, just like the problem with PMS, there is “no consensus on the cause of PMDD” as “[b]iologic, psychologic, environmental and social factors all seem to play a part”.¹²⁴ Furthermore, co-morbidity with other conditions such as major depression and anxiety overlap with PMS, and it is unclear whether one begets the other. However, patients with PMDD treated with Selective Serotonin Re-Uptake Inhibitors (SSRI) appear to react differently to the medication than people with major depression treated with the same substance. The theory that PMDD is not due to an imbalance of hormones but to a serotonergic sensitivity to the fluctuation of those hormones that was alluded to by Dalton, but today is one of the most considered to in effort to explain a potential etiology.¹²⁵ One leading medical source stated that, “[a]lmost invariably, psychosocial stressors should be addressed, either as a cause or a result of PMDD,”¹²⁶ and that some non-pharmacological treatments such as cognitive behavioral therapy and other treatments, such as calcium vitamin supplementation, have shown effective at reducing symptoms.¹²⁷

¹²³ The work group for the DSM-5 was composed of eight experts in women’s mental health from the United States, Canada, Sweden and the United Kingdom. They evaluated older criteria and determined if there was sufficient empirical evidence to support the inclusion of PMDD as a diagnostic category. Epperson C. Neill, Steiner Meir, Hartlage S. Ann, Eriksson Elias, Schmidt Peter J., Jones Ian, and Yonkers Kimberly A. "Premenstrual Dysphoric Disorder: Evidence for a New Category for DSM-5." *Am J Psychiatry* 168, no. 5 (2012): 465–475.

¹²⁴ Bhatia, Subash C. and Bhatia Shashi K. "Diagnosis and Treatment of Premenstrual Dysphoric Disorder." *Am Fam Physician* 66, no. 7 (Oct 2002): 1239-1249.

¹²⁵ Bhatia, Subash C. and Bhatia Shashi K. "Diagnosis and Treatment of Premenstrual Dysphoric Disorder." *Am Fam Physician* 66, no. 7 (Oct 2002): 1239-1249.

¹²⁶ Bhatia, Subash C. and Bhatia Shashi K. "Diagnosis and Treatment of Premenstrual Dysphoric Disorder." *Am Fam Physician* 66, no. 7 (Oct 2002): 1239-1249.

¹²⁷ Bhatia, Subash C. and Bhatia Shashi K. "Diagnosis and Treatment of Premenstrual Dysphoric Disorder." *Am Fam Physician* 66, no. 7 (Oct 2002): 1239-1249.

It's important to note that a figure like Dalton, who was so influential in the development of the modern understanding of PMS today, based many of her conclusions and treatment ideas off unsubstantiated or flawed data (i.e. no/limited control groups, no established line for rates of incidence of a symptom, etc.). As of 2016, while the severe versions of the more psychological symptoms of PMS have been adopted in the form of PMDD, the condition of PMS is still used in gynecology and has made its way into common vernacular. PMS remains an overused diagnosis by medical professionals seeking to explain away their patient's complaints. With no standardized diagnostic methods, many women's gynecological and other complaints are labeled as PMS, even with the possibility of there being other conditions present. Although it was not PMS that was directly included in the DSM, the appearance and persistence of its severe form—PMDD—has been effectively medicalized in the DSM. As the ultimate force behind this medicalization, Dalton framed how the female body and the menstrual cycle are understood. The framework that Dalton created and beseeched others to adopt served as the foundation for how PMS and PMDD are understood and studied today as medical conditions. Though many medical perspectives on PMS and PMDD today officially recognize and consider both as medical conditions, other perspectives on PMS and its cause remain skeptical and continue to question its legitimacy. With the current state of PMS in mind, this is where the chapter on the history of PMS as a medical condition will leave off and critical inquiry in the non-medical perspectives on PMS will begin.

Theoretical Framing

Surveying the primary literature foundational to PMS shows a struggle to define, diagnose and treat the condition. In the first chapter, I showed that the condition began as a handful of symptoms and grew to encompass hundreds. Debates over diagnostic

methodology consisted of standardization of timing, while difficulty remained in determining what symptoms were indicative of the condition. Severe emotional symptoms budded off into a new diagnostic category called PMDD that was included in the DSM-5. To this day, the etiology of PMS and its severe form of PMDD remain unknown. It is argued that the condition medicalizes a natural function of the female reproductive system and that PMS, as a bio-psycho-social condition, is disproportionately viewed through a biological lens.¹²⁸ The authority of medicine rests in the empiricism and objectivity of science, but the belief that science is a value-free, objective enterprise is idealistic and ignores questions about the social context in which science occurs and medical knowledge is established.¹²⁹ I am now going to delve into the social constructionist perspective on PMS.

Social Constructionism and Medicalization

Social constructionism, broadly defined, is “a conceptual framework that emphasizes the cultural and historical aspects of phenomena widely thought to be exclusively natural.”¹³⁰ One such phenomenon is disease, which in a standard medical perspective is considered temporally and spatially independent of the culture and society within which it is found, something that can be “discovered”. In his book *Limits to Medicine*, Ivan Illich examines how since the 18th century, the human body has been viewed more mechanistically. One reason for this, he claims, is due to advances in biology that have tended to follow a more reductionist path, i.e. the discovery of cells,

¹²⁸ Matsumoto T, Asakura H, Hayashi T. "Biopsychosocial aspects of premenstrual syndrome and premenstrual dysphoric disorder." *Gynecol Endocrinol* 29, no. 1 (Jan 2013): 67-73.

¹²⁹ Rosenberg Charles E., Golden Janet. *Framing Disease: Studies in Cultural History*. New Brunswick: Rutgers University Press, 1992.

¹³⁰ Conrad, Peter, Barker, Kristin K. "The Social Construction of Illness Key Insights and Policy Implications." *Journal of Health and Social Behavior* 51, no. 1 (2010): 567.

organelles, hormones, receptors, etc. This mechanistic view, according to Illich, reinforces the notion that illness is something that can be understood independently, as an immutable outside entity that can affect people, not as a thing people have. Isolating a condition in such a way makes it easier to study clinically, scrutinize scientifically and measure, to then evaluate against what is already known about the “body-machine”.¹³¹ This, however, is not a holistic perspective. A more complete explanation of a disease accounts for its social and cultural elements.

Looking at PMS through the lens of social constructionism provides a more holistic perspective because it emphasizes the distinction between what is physiologically occurring in a condition and how that condition is being perceived as an illness within a given society. Indeed, it is hard to ignore the social consequences of how an illness is labeled. For instance, some illnesses are stigmatizing; but it is never the illness itself that is stigmatizing but “the social response to the condition and some of its manifestations, or the type of individuals who suffer from it, that make a condition stigmatized.”¹³² In a very literal example, before AIDS (acquired immune deficiency syndrome) got its name, it was called GRID (gay-related immune deficiency).¹³³ GRID patients—regardless of their sexuality—were usually regarded with stigma, because it was widely assumed GRID and a “homosexual lifestyle” went hand-in-hand. Homosexuality and the disease, however, had no causal connection and this skewed the truth about who was susceptible. This example quite obviously demonstrates how sociocultural norms form the foundation of our understanding of diseases.

¹³¹ Illich, Ivan. *Limits to Medicine Medical Nemesis: The Expropriation of Health*. London: Marion Boyars Publishers LTD, 1977.

¹³² Conrad, Peter, Barker, Kristin K. "The Social Construction of Illness Key Insights and Policy Implications." *Journal of Health and Social Behavior* 51, no. 1 (2010):569.

¹³³ AVERT. *History of HIV and AIDS Overview*. Jan 26, 2016. <http://www.avert.org/professionals/history-hiv-aids/overview> (accessed Mar 23, 2016).

The sociologist Michel Foucault proposed that what is considered a disease by medicine can ultimately be traced to concepts of normality versus abnormality, which are socially informed, and that therefore we should be skeptical of the disease concepts that medicine generates. Some examples of diseases that are based on socially-informed ideas about normality/abnormality include human behaviors that are considered deviant and have, over time, transitioned from being considered moral failures to medical problems (such as the transition from drunkenness to alcoholism). The processes by which human conditions defined to be abnormal by sociocultural standards come to be construed as a medical problem is called medicalization. Many sociologists find medicalization to be problematic in that it prioritizes medical solutions without adequately referencing a patient's social context. Furthermore, the medicalization of a deviant behavior into a medical problem with potential treatments changes the terms of personal responsibility. Conrad states, "all illnesses are socially constructed at the experiential level based on how individuals come to understand their illness, forge their identity, and live with and in spite of their illness."¹³⁴ Recognizing that discourse about a disease could "influence people's behaviors, impact their subjective experience of embodiment, shape their identities, and legitimate medical interventions,"¹³⁵ Foucault recommended that the discourse be dissected in order to "see" in greater completeness, what a disease was, accounting for its history and multiple meanings in a social context.

The social constructionist perspective can be used as an analytic framework that dissects medicalization and how experiences and symptoms are defined and treated as medical conditions. Illnesses are interesting because they are "created" in part through

¹³⁴ Conrad, Peter, Barker, Kristin K. "The Social Construction of Illness Key Insights and Policy Implications." *Journal of Health and Social Behavior* 51, no. 1 (2010):567.

¹³⁵ Conrad, Peter, Barker, Kristin K. "The Social Construction of Illness Key Insights and Policy Implications." *Journal of Health and Social Behavior* 51, no. 1 (2010):569.

patient-doctor, patient-patient, patient-legal, and commercial interactions. In regards to contested illnesses like PMS, this is easier to see but it is of course true of all illnesses. Looking at contested illnesses, however, can provide a perspective that allows one to understand the social construction of diseases at large. Social constructionists argue that having a narrow definition of disease does not paint as holistic or representative a picture of the complex interplay of social and environmental forces influencing health and well being. This overemphasis ascribed to finding a biological cause is reinforced not only by medical professionals but is also supported by patients who are becoming increasingly active within the biomedical framework, themselves participating in the medicalization of their own experience. Many critics propose that PMS is a socially constructed condition directly pathologizing the menstrual cycle, a natural bodily function experienced by human females. Some have argued that the condition functions “as a discursive category which makes sense of emotions, behaviors and desires which are at odds with hegemonic cultural constructions” of ideal femininity.¹³⁶

PMS as a Culture-bound Condition

One can assume that human bodies across the world and in different cultures work, on average, in more or less the same way. For this reason conducting cross-cultural analysis of a supposed biological condition such as PMS is useful because it can reveal the dynamics of medicalization and disease-specification. Cross-cultural studies of PMS have revealed that the condition and the concept itself are not prevalent outside of western countries. One reason might be that this is due to the subject of menstruation still being tabooed, so problems associated with it are not discussed but instead accepted as being

¹³⁶ Ussher Jane M., Hunter Myra, and Browne Susannah J. "Good, bad or dangerous to know: representations of femininity in narrative accounts of PMS." In *Culture in Psychology*, edited by Corinne Squire, 85-96. London: Routledge, 2000: 88.

expected parts of a woman's experience. It's not that other cultures haven't recognized physiological and psychological symptoms that may be associated with parts of the menstrual cycle; in fact, there have been remedies directed for specific symptoms such as cramps, migraine or bloating devised across the world. But, what is different about the Western world is that they have not focused on the symptoms themselves, but instead they pathologized a portion of the cycle and allowed for an almost boundless set of symptoms to fall within its scope. It is the luteal phase of the cycle that is perceived as containing the illness of PMS, though it may be that individuals already experience associated symptoms at other times of the cycle and are simply more aware to the point that PMS is perceived as causing or exacerbating these symptoms. Comorbid conditions, coupled with a social conditioning to be hyper aware of the potential negative effects of the cycle, may have a stronger effect than the cycle in affecting the individual mood. It is unclear which has a greater pull on the condition, but several studies have shown how the power of suggestion quickly negates the supposed biological validity of PMS.^{137, 138} Studies reveal a tendency for people to *misattribute* problems or negative behaviors to the premenstrual phase of the menstrual cycle while attributing positive behaviors to a woman's personality or situation. The *same* negative behavior displayed by a premenstrual woman is rated as more "severe and unreasonable" than when the *same* behaviors are displayed by a non-premenstrual woman or man.¹³⁹

Such studies reveal a more complex model of PMS and how the bodies that can experience PMS are understood. The model that PMS is a condition with a biological

¹³⁷ Caplan, Paula J., Caplan, Jeremy. *Thinking Critically about Research on Sex and Gender*. New York: Routledge, 2016.

¹³⁸ Rubel, Diane N. "Premenstrual symptoms: a reinterpretation." *Science*, 1977: 291-2.

¹³⁹ Caplan, Paula J., Caplan, Jeremy. *Thinking Critically about Research on Sex and Gender*. New York: Routledge, 2016.

basis presumes that female bodies are more or less the same and that physiological conditions are impervious from cultural and concepts. The suggestibility of the PMS diagnosis contradicts what Dalton and others insisted was a condition with a definite somatic cause and begged the question of what, if not biological, was and caused PMS?

Social Constructionism Meets Feminist Analysis

It only makes sense to follow from an explanation of social construction and culture-bound illness to a more focused look at how these theories have been carried into the feminist analysis of PMS. On its own, feminist discourse explores social constructionism in terms of gender and sex-roles and how the roots of the two manifest in various places. One of these places is medicine. Due to the sex-specific nature of the PMS and the social implications of it being a diagnosis, analysis of the topic has been tackled by feminist sociologists and psychologists. The feminist perspective on medicalization and the social construction of disease is particularly relevant to the case study of PMS because it questions the objectivity of medical knowledge and can reveal how “some medical ideas have been shown to support gender, class, and racial-ethnic inequality.”¹⁴⁰ The case of PMS is but one example that illustrates how concepts of ideal femininity and sex roles in Western society stay embedded within scientific and medical discourse. The menstrual cycle, and menopause are two instances where natural bodily functions experienced by most females are understood in medical terms. While medicalization of a condition may be beneficial to individual patients via illness recognized as legitimate, as a diagnostic category, it may also be detrimental to a demographic—women.

¹⁴⁰ Conrad, Peter, Barker, Kristin K. "The Social Construction of Illness Key Insights and Policy Implications." *Journal of Health and Social Behavior* 51, no. 1 (2010).

The early 19th century saw the discovery of sex-hormones, and since then, many individual functions, behavior, roles, and characteristics have been speculated to be influenced by them. On a quantitative level, both sexes have the same hormones, albeit in different concentrations, with the main difference being that females have cyclically fluctuating levels of these hormones. According to Oudshoorn, “the female body, but not the male body, has become increasingly portrayed as a body completely controlled by hormones.”¹⁴¹ Although aspects of male physiology have been used to explain behaviors of men, hormones have rarely been suspected to be the source of aberrant behavior of any single male.¹⁴² The inclusion of PMDD as a mood disorder with an alleged hormonal cause serves to further sediment this concept. Interestingly, similar mood disturbances in men have never been officially codified as a hormonally related psychiatric disorder, despite wide discussion on how the male sex hormone, testosterone, is linked to aggression and the statistic that mostly men display violence.¹⁴³

On the contrary, the role of hormones in women has played a significant role in inferring women’s behavior and emphasis has been given to the cyclicity of hormone levels in females and the effect the natural fluctuations have on them. One example of how women have been thought to be more susceptible to their own hormones was suggested by none other than Dalton when she insisted that, “women are innocent, misunderstood victims of their hormones.”¹⁴⁴ In her book, *Premenstrual Syndrome and Progesterone Treatment*, Dalton presents a hypothetical woman getting over her PMS symptoms:

¹⁴¹ Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994:8.

¹⁴² With the exception of anabolic steroid use.

¹⁴³ Caplan, Paula J., Caplan, Jeremy. *Thinking Critically about Research on Sex and Gender*. New York: Routledge, 2016.

¹⁴⁴ Dalton, Katharina. *The Premenstrual Syndrome and Progesterone Therapy*. London: William Heinemann Medical Books LTD, 1977:62.

“Then suddenly her irritability ends. She is once more her usual sweet tempered and placid self, or she may be filled with guilt and remorse at the problems her actions have caused.”¹⁴⁵

Although this quote describes one symptom of PMS, it also exposes underlying assumptions of what constitutes femininity (i.e. “sweet tempered and placid self”) and does not constitute femininity through the lens of a medical condition. In this section I will show several instances where PMS has been used as a scaffold for *re*-constructing concepts of femininity that perpetuate the idea of women’s behaviors as expressions (includes symptoms of course) of bodies they have no control over, but at the same time are identical with and thus reducible to. In the above excerpt, Dalton readily reduces “women” to being at the mercy of their hormones. However, women with and without PMS exhibit the same hormonal fluctuations. Some suspect that the use of hormones to excuse certain behavior has been abused and increased the emphasis placed on certain symptoms over others. Although a host of somatic symptoms fall under PMS, the symptoms of irritation, anger, anxiety and depression have routinely been over-emphasized in the media to the point where the acronym is used non-medically to explain a woman’s words or actions. Feminists argue that these symptoms straddle the border of individual health and social expectation. Therefore, a woman who is irritated or angry is at odds with fulfilling her “natural” role of being a “placid” and “sweet-tempered” nurturer, and by Dalton’s definition must be in the throes of PMS.

Media Representation

While some women may experience a disabling change in the way they deal with negative emotions during their premenstrual phase, this is not representative of every women premenstrual experience. Including negative emotions that individuals naturally

¹⁴⁵ Dalton, Katharina. *The Menstrual Cycle*. New York: Pantheon Books, 1969:54.

experience at various points in their lives within the symptomology of PMS is dangerous because it medicalizes those emotions in women. This puts women into an awkward position where one week out of the month, their negative emotions are a result of their “hormones,” when the other three weeks out of the month the same emotion would be ascribed to a different cause. The result of this can be seen in the media where “hormones” or “PMS” has been used in common vernacular to disregard a female character’s actions or perception of a negative experience. More egregiously in the U.S., a women’s ability to hold positions of authority and serve as president have also been called into question on account of them potentially having PMS. In 2008, talk show host Bill O’Reilly asked author Marc Rudov “what the downsides of a female president” would be. To this Rudov replied with a chuckle, “You mean besides the PMS and the mood swings?”¹⁴⁶ Questioning a female candidate’s capacity to serve as president is still brought up during the 2016 election as a viable downside. For example, this post exemplifies the skeptical sentiment on the worldwide social media outlet, Twitter:



One particularly bizarre use of the term PMS can be seen in the 2011 ad campaign for the California Milk Processor Board, famous for its previous “Got Milk?” marketing slogan. “Inspired” by some research published regarding calcium supplementation lessening PMS symptoms, the board sought to create a humorous public health ad. The

¹⁴⁶ Hess Amanda, Waldman Katy. The Downsides of Having a Female President. Feb 27, 2014. http://www.slate.com/blogs/xx_factor/2014/02/27/bill_o_reilly_asks_what_are_the_downsides_of_a_woman_president_we_have_answers.html (accessed Mar 13, 2016).

result was a series of posters featuring frightened men holding milk cartons with “Milk can help reduce the symptoms of PMS” emphasized.¹⁴⁷



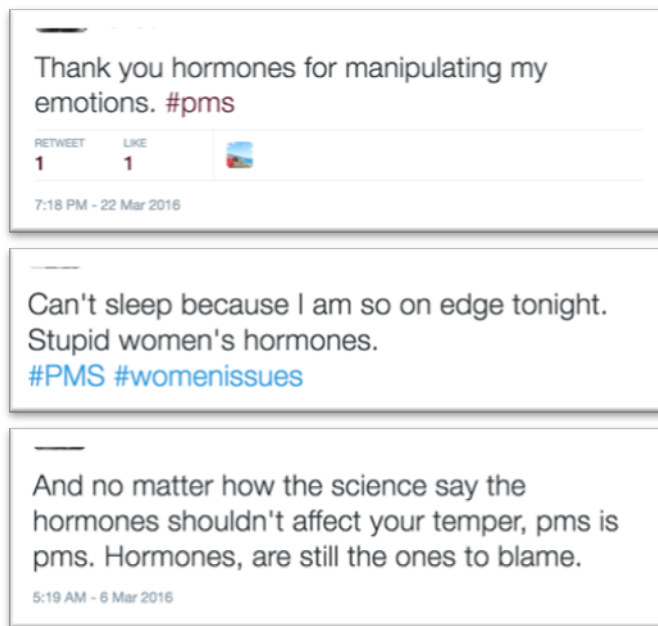
What is interesting about these ads is that although women are the only demographic who can experience PMS, the marketing is directed towards men that “deal with” women with PMS. Additionally, this ad hints at the general emphasis given to the negative emotional symptoms of the condition. A closer look at one calcium supplementation study referenced by the milk board reveals that improvement in negative affect was only 17% more effective than placebo. In reduction of pain (lower abdominal cramping, generalized aches and pains, and back aches) there was a 69% increase in effectiveness than placebo.¹⁴⁸ Despite the marked success of calcium relieving pain, the ad company focused on marginal improvement of negative affect, revealing what they expected would resonate more with public perception of PMS. Had the board been concerned with

¹⁴⁷ Hensley, Scott. Got PMS? Marketers Want You To Reach For The Milk Carton. July 27, 2011. <http://www.npr.org/sections/health-shots/2011/07/27/137816152/got-pms-marketers-want-you-to-reach-for-the-milk-carton> (accessed Mar 10, 2016).

¹⁴⁸ Kia Afsaneh Saeedian, Amani Reza, and Cheraghian Bahman. "The Association between the Risk of Premenstrual Syndrome and Vitamin D, Calcium, and Magnesium Status among University Students: A Case Control Study." *Health Promot Perspect* 5, no. 3 (2015): 225-230.

honestly conveying the research findings for PMS symptom reduction via calcium supplementation, it would've made more sense to feature a relieved woman on the ad.

However, it is important to point out that lay individuals are also complicit in the creation and edification of PMS. Briefly browsing the Internet and social media reveals how some women themselves use the term. Below are a few samples showing the ways random women on the social media page Twitter talk about their life experiences:



When looking at these three Twitter posts it becomes apparent that some women attribute a variety of different states of being to PMS and regard it as resulting from a “hormonal imbalance.” Their perceived connection falls in line with the primary etiological model put forth by medical and psychological experts. Further, repetition of the hormonal causation theory in women’s magazines and self-help texts expose the way the condition is understood by the public. Despite the presence of evidence against the efficacy of hormone treatment and its connection to PMS, hormones remain the primary scapegoat for PMS as portrayed in both the media and by individuals. The fixation applied to hormones as a potential cause reveals the eagerness of medical specialists to

implicate them in causing disease. However, there may be other causes or even conditions that could present as PMS. According to Jane Ussher, “[w]ithin a positivist paradigm, the body is implicitly considered to be more fundamental or ‘real’ than psycho-social variables, resulting in the emphasis on measureable aspects of biology in research on the reproductive body.”¹⁴⁹ These psycho-social variables include such things as stress which can manifest similarly as certain symptoms of PMS or other conditions.

Both PMS and PMDD depend on the self-reporting of an individual’s symptoms. The validity of using retrospective questionnaires in the first place has been critiqued. According to Chrisler and Caplan, researchers have found a correlation between self-described PMS sufferers and life stress that include but are not limited to a monotonous or high workload, economic strain, marital troubles and family tension. Additionally, personality appears to be implicated in how some women interpret and understand their experiences. Women who self describe with PMS are less likely to apply problem-focused coping methods and seek out social support but are more likely to vent their negative emotions, claim victimhood, be avoidant, and engage in wishful thinking. Furthermore, “researchers have found that women who seek treatment for PMS and PMDD exhibit higher than average levels of anxiety and depression and adhere to the traditional feminine gender role.”¹⁵⁰ This collection of findings indicate that it’s very possible that what is believed to be PMS is largely non-somatic in origin and has less to do with hormones than it has to do with confounding external and psychosocial factors. Nonetheless, the hormone explanation not only persists within PMS but also reaches beyond the condition and applies to menstruation in general.

¹⁴⁹ Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006: 38.

¹⁵⁰ Chrisler, Joan C., Caplan, Paula. "The strange case of Dr. Jekyll and Ms. Hyde: how PMS became a cultural phenomenon and a psychiatric disorder." *Annu Rev Sex Res* 13 (2002): 274-306.

Attributing the “symptoms” of irritability and anger in women to their hormones also occurs at times other than the luteal phase. Hormones are also regularly blamed for dissatisfaction at other life stages. Discontent in adolescent girls could be accounted for with “raging” teen hormones, in older women with menopause and in young women who don’t menstruate to a hormone irregularity. This gendered biological reductionism runs the risk of creating an environment where women and their thoughts and behaviors are invalidated and attributed to their bodies instead to their life situation or external stressors. Some worry that diagnosing PMS “increases the power of the medical profession over [women’s] minds and bodies, enabling them to redefine conflicts and tensions in [women’s] lives as sickness, and puts pressure on [them] to conform.”¹⁵¹ This “conforming” is in reference to the social expectations placed upon women to act a certain way that reinforces stereotypes of femininity. Another factor to consider in regards to PMS symptomology is its comorbidity with other conditions. Several researchers have suggested that PMS and PMDD are more likely to present in individuals who already have a history of mood, personality, and anxiety disorders.¹⁵²

Social constructionists have argued against the usefulness of technically isolating and studying disease by claiming that all diseases are socially created realities inextricable from their histories. This history of actors and ideas is crucial to seeing a disease for the totality of what it is without prioritizing biochemical or physiological knowledge over what is social or political. As has been presented in the ideas of sociologist Erving Goffman and psychiatrist Thomas Szasz, the organization and examination of disease is done often through the language of natural science, which is

¹⁵¹ Laws, Sophie, Hey, Valarie, Eagan, Andrea. "Seeing Red: The Politics of Pre-Menstrual Tension." (Hutchinson Educational) 1986: 7.

¹⁵² Caplan, Paula J., Caplan, Jeremy. *Thinking Critically about Research on Sex and Gender*. New York: Routledge, 2016.

effective for studying physical things but is not inclusive enough to deal with disease, in particular mental illness that is engrained in a social, ethical and political milieu.¹⁵³

In order to better understand the status of the condition, it is crucial to compare how people used to talk about it in the past and how they talk about it now. Dissecting the language used by medical researchers can reveal their personal beliefs about health and gender as well as reflect the social context of time during which they worked. In terms of researching PMS, although the words used may be subtle and the terminology more obscure, the basic argument remains that women relinquish control of their faculties to their menstrual cycles and are thus given to inexplicable behavior. Also, it is worth looking at how non-medical individuals interact with the PMS category because it reveals how stereotypes of femininity and “unfeminine” conduct manifest.

Many view science as a value-free ideal, with sterile methods that bring one closer to “objective” knowledge. The veracity of its methods is grounded in third party replication and confirmation. However, societal values along with context are inextricable from scientific knowledge. Helen Longino, a philosopher of science and feminist theorist, points out the limits of scientific knowledge, claiming that it disproportionately focuses on the logic of justification while neglecting the process of selection that occurs in the context of discovery.¹⁵⁴ Tying this back to PMS, current medical and non-medical discourse on the subject tends to reference the newest publications on the subject. The flawed work of Dalton’s that is the foundation for most current writing on the subject is seldom reached because each new publications on PMS conceptually distances the reader from that work. With each new publication, PMS is

¹⁵³ Illich, Ivan. *Limits to Medicine Medical Nemesis: The Expropriation of Health*. London: Marion Boyars Publishers LTD, 1977.

¹⁵⁴ Longino, Helen E. *Science as Social Knowledge*. Princeton: Princeton University Press, 1990.

sedimented as legitimate until its more questionable origins are fossilized, buried in stone, and obscured.

There are multiple levels of inquiry and critical analysis that have been employed in the study of disease. There is of course the field of medicine, with its many specialties, as well as the sciences. There is epidemiology, philosophy, and sociology; among a few of the ways people have attempted to look at disease. Different heuristics and methods of discovery serve as processes of selection that limit what hypothesis we do or do not select. Longino and others have “identified heuristic biases—androcentrism, sexism, and gender ideology—that limit the hypotheses in play in specific areas of inquiry” and have also pointed out that alternative heuristics put different hypotheses into play.¹⁵⁵

However, a theory of scientific inquiry that focuses solely on methods of discovery presents its own issues, as does a singular focus on the justification of a discovery. If one looks at the persistence of such views in biological theories, problems usually revolve around justification, not the rule-based methodology. It’s not the methods of science that are themselves androcentric, it’s the persisting gender ideologies of the individuals using those methods and interpreting the data that skews what is being scientifically tested.

The “situatedness” of science, while recognized and minimized (as in the cases of randomized double blind studies), is impossible to eliminate completely because it and its products are always already embedded in a particular social world. Science, according to Donna Haraway, lends itself to “crafting the world into effective objects”¹⁵⁶ in order to facilitate the “search for translation, convertibility, mobility of meanings, and

¹⁵⁵ Longino, Helen E. *Science as Social Knowledge*. Princeton: Princeton University Press, 1990:102.

¹⁵⁶ Haraway, Donna J. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge, 1991: 185.

universality.”¹⁵⁷ This universality of objectivity is one of the informal principles upon which science is built. There is no one position from which value-free knowledge can be developed. Haraway expands the definition of Science to factor in how its “objectivity” rests in the combined knowledge produced by individuals who practice the method. Frequently, the terms objectivism and relativism are pitted against each other as total opposites. One of the tenets of social constructivism is that as long as something is being reflected through the lens of a person, it’s impossible for it to be objective. This can pose a problem for science and medicine, whose credibility is mostly dependent on the reproducibility and objectivity of their output. However, neglecting the origins of this information can also neglect the nuances and influences of the society. In relation to medicine and subjects that deal with the corporeal, the consequences may be rather problematic. Logino however argues that recognizing science is not value free is a step to bringing it closer to objectivity. To clarify, she means that objectivity can be achieved by examining scientists’ reasoning and assumptions, who have unique perspectives on ethical and political values. Further, it must be acknowledged that the knowledge produced also depends on the consensus reached in the scientific community as the community discerns what is classified as knowledge. However, the case study of PMS reveals how an object of knowledge can get made without complete consensus on its scientific and medical validity. PMS shows that there are other factors such as the voices of certain doctors and the cries of patient groups, which influence the making of medical objects.

It is important to look at the history of a medical diagnosis/disease concept to understand and identify under what social and cultural contexts it developed and, if possible, to identify the individuals pivotal in its development. In the case of PMS,

¹⁵⁷ Haraway, Donna J. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge, 1991:187.

because it is so contested, to see where PMS came from is a way of understanding what it really is. What PMS is considered today is an inevitable result of its past and how it came to be classified and by whom it came to be classified.

CONCLUSION

In the process of writing this project I have encountered several individuals who were surprised to hear that PMS has been considered a medical condition. Most recognize the three-letter acronym from its common vernacular use in jokes and self-descriptions. In many respects, the term has been around long enough to where people say it without questioning its history. Their surprise at finding out its origins turns to acceptance that the condition and all the jokes associated with it just might be supported empirically, since it has been the focus of medical and scientific research. It is not uncommon to find authors of current research articles invoking the timelessness of menstrual related problems to reaffirm the “realness” of the diagnostic category of PMS.¹⁵⁸ This invocation may be inane or serve to fluff the introduction section of some piece of literature, but such casual use reveals how pervasive the concept is, and so too the negative light it casts on the female body.

One question that I’ve been routinely asked is, “Is PMS real?” To this my only reply is that such a question only distracts from a more nuanced understanding of PMS. Its presence in discourse makes it real enough to be something worth investigating. The question of whether it is “real” is more a question of whether PMS is a medical condition or a social construction, though even this is missing the point because as has already been covered, medicine is always a “social construction” in the sense that it is

¹⁵⁸ Chrisler, Joan C., Caplan, Paula. "The strange case of Dr. Jekyll and Ms. Hyde: how PMS became a cultural phenomenon and a psychiatric disorder." *Annu Rev Sex Res* 13 (2002): 274-306.

inextricable from the society and culture that employs and develops it. Therefore, in order to get at what PMS is, one has to examine how PMS came to be regarded as a medical condition, including the history, social and cultural contexts within which it developed and the individuals pivotal in that development.

As I have shown, the question of whether a given disease—like PMS—is “real” or not is the wrong question. What we should instead ask is: what are the benefits and drawbacks of a certain human status or condition being considered a disease? These are the meaningful questions whose answers are of consequence. How does labeling something as a medical problem affect how people regard it, both on an individual level and at a social, moral, and legal level? How does it affect patients and their treatment? These are all questions with multi-dimensional answers. Despite the complexity of these questions and their answers, it is possible to isolate the dynamics and compromises that comprise disease making. By disease making, I do not mean to suggest a simplistic fabrication of a human state for a single purpose (i.e., the accusation that is commonly invoked in this way are theories of pharmaceutical company profit schemes). By “making” I mean the measuring, interpreting, relating, sympathizing and treating that all go into framing health and disease across time and space. I chose PMS as a case study because of its cultural ubiquity as well as its recent and contested medical history.

An analysis of pop-culture representation of female characters reveals many instances where a character’s current phase of the menstrual cycle is brought into question after she displays a mood that is not neutral or positive. Although intended for comedic effect, this reveals a cultural tendency to ascribe an individual female’s thoughts or actions to their reproductive system. In her book *The Second Sex*, Simone De Beauvoir addresses the tendency to view women as derivatives of male biology. Beauvoir asserts

that Man, linguistically¹⁵⁹ and generally holds both the perspective of male and neutral while women are never regarded neutrally.¹⁶⁰ Instead women are forever connected to their female biology.¹⁶¹ Of course as humans we are our corporeal selves. However, the extent to which our biology plays a role in determining who we are as individuals is constantly being revisited vis-à-vis the nature vs. nurture debate. The bio-essentialization of individuals to their genes, or in the case of PMS, their organs, limits their autonomy. Susan Sontag, in her book, *Illness as Metaphor*, offers a critique of this type of bio-essentialization in her discussion of how people imbue illness with different meanings and use metaphor to subconsciously make sense of the phenomenon of disease. She states, "Of course, one cannot think without metaphors. But that does not mean there aren't some metaphors we might well abstain from or try to retire."¹⁶² I invoke Sontag's use of "metaphor" to examine menstruation and its associated pathologies such as PMS and point out that since the classical period, the metaphor of a woman being controlled by her reproductive system persists, albeit in a rhetorically different form, namely, hormones.

Since the 1970's, feminist critics of science and medicine such Lynda Birke have discussed how assertions made within biology presupposed the acceptance of a particular set of values and were reductive and essentially cultural and political.¹⁶³ Concepts such as "sex" and "gender" have brought further questioning into the nature vs.

¹⁵⁹ The word Man is used as the Platonic universal for humanity; this is never the case for woman in the English language.

¹⁶⁰ Beauvoir, Simone de. *The Second Sex*. New York: Vintage Books, 1989.

¹⁶¹ For the purpose of this paper I am not going to mention transgender individuals, although this is a very interesting avenue to investigate PMS.

¹⁶² Sontag, Susan. *Illness as Metaphor and AIDS and Its Metaphors*. New York: Farrar, Straus and Giroux, 1977:93.

¹⁶³ Roberts, Celia. *Messengers of Sex Hormones, Biomedicine and Feminism*. Cambridge: Cambridge University Press, 2007.

nurture debate and have stood against rigid biological structures as Beauvoir's articulates, "one is not born, but rather becomes, a woman".¹⁶⁴ As I demonstrated in chapter one, the conceptual environment into which PMS emerged, and the work of the individuals who discovered, isolated, and attempted to make sense of the "internal secretions" and their physiological role in the new field of endocrinology, were important ingredients in lending credibility to a physiological construction of PMS. Even in this scientifically informed field, preconceived notions of what ought to be found in females and males in terms of sex hormones guided many, such as Robert Frank and Katharina Dalton in their pursuit of knowledge.

PMS is not unique in this regard. In the last century there has been a tendency to scrutinize and understand a range of human experiences with a biological lens. Complex emotions such as love have attempted to be explained as mere increases in the levels of the hormone oxytocin.¹⁶⁵ Technological advancements have ushered in yet another reductionist way of inquiring and explaining a variety of human conditions in the form of genetics and epigenetics. Recently, scientists have sought a to find a genetic basis to PMS. This can be seen as the most reductionist inquiry of PMS to date that aims to once and for all biologically cement the condition to the DNA¹⁶⁶ of the female individual.

Just as I have described hormones to be a problematic way of understanding premenstrual changes in women, the emerging genetic conceptualization is still more

¹⁶⁴ Beauvoir, Simone de. *The Second Sex*. New York: Vintage Books, 1989:iiiv.

¹⁶⁵ Stix, Gary. "Fact or Fiction?: Oxytocin Is the "Love Hormone"." *Scientific American*. 09 08, 2006. <http://www.scientificamerican.com/article/fact-or-fiction-oxytocin-is-the-love-hormone/> (accessed 04 26, 2016).

¹⁶⁶ Kendler KS, Silberg JL, Neale MC, Kessler RC, Heath AC, Eaves LJ. "Genetic and environmental factors in the aetiology of menstrual, premenstrual and neurotic symptoms: a population-based twin study." *Psychol Med* 22, no. 1 (Feb 1992): 85-100.

problematic because it is still more reductionist. Yet psychological and social inquiry, sometimes biologically informed and other times totally skeptical of the biologically written material on PMS have emphasized that the condition is “man made”. Cross-cultural studies failing to find that PMS exist outside of the developed world suggest that biology may not play as big a role as was originally proposed for PMS. Indeed, while PMS is surely biological in some sense, it is necessarily also a psychological *and* social phenomenon. What “PMS” is today is a result of its past, not least of how it came to be classified and who classified it. As I have shown, once PMS became established, tested for and treated in a medical sense, questioning of whether it was a legitimate entity became irrelevant: the most important step in becoming “real” was becoming recognized and used in medical and public discourse.

Again, PMS is not unique in this regard. In order for an individual to be taken seriously and treated as a medical patient, their suffering must be recognized and validated. Although this may seem obvious, recognition is not given, but must be produced. Indeed, recognition is something many individuals and patient groups fight for. According to Rosenberg, “[e]ven a bad prognosis can be better than none at all; even a dangerous, but familiar and understandable, disease can be emotionally more manageable than a mysterious and unpredictable affliction.”¹⁶⁷ It is this desire to organize chaos and minimize suffering that drives diagnosis and thereby determines treatment. Though how this chaos is organized depends upon what intellectual tools are available and recognized as legitimate, tools that differ between the medical specialties and that have changed over time.

In regards to PMS, the prime diagnostic tool of use has been self-reporting questionnaires. The nature of this diagnostic method, coupled with a lack of

¹⁶⁷ Rosenberg Charles E., Golden Janet. *Framing Disease: Studies in Cultural History*. New Brunswick: Rutgers University Press, 1992:xvii.

questionnaire standardization is one reason behind why PMS is sometimes called a “catch-all” condition. This catch-all nature is something Dalton herself perpetuated when she said “[p]remenstrual syndrome covers an infinite variety of symptoms but the diagnosis can never be made solely on the basis of symptoms...[but instead] is dependent of the timing of the symptoms.”¹⁶⁸ This left the door open for a wide variety of things to be considered.

As with any syndrome, PMS is both a collection of symptoms and a presumed underlying cause of those symptoms. This is so in part because cause and effect become wrapped under the same package. Such mixing of cause and effect, disease entity and symptoms are evident throughout the development of PMS. For instance, in a study conducted by Jane Ussher, she asked women to describe what effect PMS had on their lives and found that “difficulties in relationships; not being able to perform well at work; not wanting to be sociable; feeling unhappy, angry, or anxious”¹⁶⁹ were the most commonly reported problems. Dalton was the first to bring attention to how PMS could negatively impact women in the work place. She advised women to notify their employers when they had PMS so that their actions or words would not be used against them. It is important to emphasize that all of these problems uncovered by Jane Ussher have a negative impact of women’s lives. According to Ussher, how PMS has been talked about informally by women and officially in the medical and psychological discourse shows that “it is a thing that is constructed through women’s narratives, and through the

¹⁶⁸ Dalton, Katharina. *The Premenstrual Syndrome and Progesterone Therapy*. London: William Heinemann Medical Books LTD, 1977.

¹⁶⁹ Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006:37.

public and private discourse produced by experts, that together form the body of objectified knowledge.”¹⁷⁰

Today, inquiries into sexual difference, biological life, and reproduction have come to hold greater weight as biomedical and discoveries provide explanations of the human body and interventions into it.¹⁷¹ At first inquiry, the reproductive organs themselves were implicated and later focus changed to their hormonal secretions, and recently to the genes individual with those organs. The methods and the body part studied may change but what is significant is that the pursuit continues. What matters is why is it being pursued? Is this the right way for it to be pursued? And finally, should be pursued in the first place? As this thesis has shown, such pursuits, and the categories they generate, have real consequences for how we understand and act upon ourselves.

One crucial concern regarding how diseases are defined and their etiologies determined rests in their potential to “serve as tools of social control, as labels for deviance, and as a rationale for the legitimization of status relationships.”¹⁷² Ultimately, a disease definition has consequences, consequences for individuals, and the demographic they fall under. With each use and reference, both medically and non-medically, PMS is further cemented into being.

¹⁷⁰ Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006:37.

¹⁷¹ Roberts, Celia. *Messengers of Sex Hormones, Biomedicine and Feminism*. Cambridge: Cambridge University Press, 2007.

¹⁷² Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006:37.

BIBLIOGRAPHY

- AVERT. *History of HIV and AIDS Overview*. Jan 26, 2016.
<http://www.avert.org/professionals/history-hiv-aids/overview> (accessed Mar 23, 2016).
- Beauvoir, Simone de. *The Second Sex*. New York: Vintage Books, 1989.
- Bernard, Raymond W. *The Physiological Enigma of Woman: The Mystery of Menstruation Its Cause and Cure*. Pomeroy, WA: Health Research, 1999.
- Bhatia, Subash C. and Bhatia Shashi K. "Diagnosis and Treatment of Premenstrual Dysphoric Disorder." *Am Fam Physician* 66, no. 7 (Oct 2002): 1239-1249.
- Boston Women's Health Collective. *Women and Their Bodies: A Course*. Boston: Boston Women's Health Collective, 1970.
- Caplan, Paula J., Caplan, Jeremy. *Thinking Critically about Research on Sex and Gender*. New York: Routledge, 2016.
- Chrisler J.C., Caplan P. "The strange case of Dr. Jekyll and Ms. Hyde: how PMS became a cultural phenomenon and a psychiatric disorder." *Annu Rev Sex Res* 13 (2002): 274-306.
- Chrisler, Joan C., Caplan, Paula. "The strange case of Dr. Jekyll and Ms. Hyde: how PMS became a cultural phenomenon and a psychiatric disorder." *Annu Rev Sex Res* 13 (2002): 274-306.
- Chrisler, Joan C., Rose, Jennifer Gorman, Dutch, Susan E., Sklarsky, Katherine G., Grant, Marie C. "The PMS Illusion: Social Cognition Maintains Social Construction." *Sex Roles* 54, no. 5 (2006): 371-376.
- Clare, A. W. "The Treatment of Premenstrual Symptoms." *British Journal of Psychiatry* 135 (1979): 576-579.
- Conrad, Peter, Barker, Kristin K. "The Social Construction of Illness Key Insights and Policy Implications." *Journal of Health and Social Behavior* 51, no. 1 (2010).
- Dalton, Katharina. "Menstruation and Acute Psychiatric Illnesses." *Br Med J* 1, no. 5115 (1959): 148-149.
- Dalton, Katharina. "Menstruation and Crime." *Br Med J* 2, no. 5269 (Dec 1961): 1752-3.
—. *The Menstrual Cycle*. New York: Pantheon Books, 1969.
—. *The Premenstrual Syndrome and Progesterone Therapy*. London: William Heinemann Medical Books LTD, 1977.
- Delaney, Janice, Lupton, Mary Jane, Toth, Emily. *The Curse: A Cultural History of Menstruation*. University of Illinois Press, 1988.
- Dept. of Health and Human Services Office on Women's Health. *Premenstrual Syndrome*. 12 30, 2015.

<https://www.nlm.nih.gov/medlineplus/premenstrualsyndrome.html> (accessed 02 06, 2016).

Dixon, Laurinda S. *Perilous Chastity: Women and Illness in Pre-Enlightenment Art and Medicine*. Ithaca: Cornell University Press, 1995.

Epperson, Neill C., Steiner, Meir, Hartlage, Ann S., Eriksson, Elias, Schmidt, Peter, J., Jones, Ian, and Yonkers, Kimberly A. "Premenstrual Dysphoric Disorder: Evidence for a New Category for DSM-5." *Am J Psychiatry* 168, no. 5 (2012): 465–475.

Flemming, Rebecca. *Medicine and the Making of Roman Women: Gender, Nature, and Authority from Celsus to Galen*. Oxford: Oxford University Press, 2000.

Frank, Robert T. "The Hormonal Causes of Premenstrual Tension ." *Arch NeurPsych*. 26, no. 5 (1931): 1053-1057.

Frank, Robert T. *The Female Sex Hormone*. Springfield, Ill, 1929.

Frank, Robert T. "The Female Sex Hormone and the Gestational Gland." *JAMA* 84, no. 23 (1925): 1715-1719.

Frank, Robert T. "The Hormonal Causes of Premenstrual Tension." *Arch NeurPsych* 26, no. 5 (1931): 1053-1057.

Frank, Robert T. "The Role of the Female Sex Hormone." *JAMA* 97, no. 25 (1931): 1852-1857.

Frank, Robert T. "The Sex Hormones Their Physiologic Significance." *JAMA*, 1940: 1504-1512.

Greene,Raymond, Dalton,Katharina. "The Premenstrual Syndrome." *British Medical Journal*, 1953: 1007-1014.

Haines, Catharine M. C. "Dalton, Katharina Dorothea nee Kuipers." In *International Women in Science: A Biographical Dictionary to 1950*, by Catharine M. C. Haines, 383. Santa Barbara: ABC-CLIO, 2001.

Haraway, Donna J. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge, 1991.

Hemphill, R.E. "Endocrine Treatment In Psychiatry." *The British Medical Journal*, Feb 1955: 501-504.

Hensley, Scott. *Got PMS? Marketers Want You To Reach For The Milk Carton*. July 27, 2011. <http://www.npr.org/sections/health-shots/2011/07/27/137816152/got-pms-marketers-want-you-to-reach-for-the-milk-carton> (accessed Mar 10, 2016).

Hess Amanda, Waldman Katy. *The Downsides of Having a Female President*. Feb 27, 2014.

http://www.slate.com/blogs/xx_factor/2014/02/27/bill_o_reilly_asks_what_are_the_downsides_of_a_woman_president_we_have_answers.html (accessed Mar 13, 2016).

Horney, Karen. "Die pramenstruellen Verstimmungen. ." *Zeitschrift fur Psychoanalytische Padagogik* 5 (1931): 1-7.

Illich, Ivan. *Limits to Medicine Medical Nemesis: The Expropriation of Health*. London: Marion Boyars Publishers LTD, 1977.

"Interview: Katharina Dalton, MD: Progesterone and Related Topics." *International Journal of Pharmaceutical Compounding*, Sept/Oct 1999: 1-11.

Kendler KS, Silberg JL, Neale MC, Kessler RC, Heath AC, Eaves LJ. "Genetic and environmental factors in the aetiology of menstrual, premenstrual and neurotic symptoms: a population-based twin study." *Psychol Med* 22, no. 1 (Feb 1992): 85-100.

Laws, Sophie, Hey, Valarie, Eagan, Andrea. "Seeing Red: The Politics of Pre-Menstrual Tension." (Hutchinson Educational) 1986: 96.

Longino, Helen E. *Science as Social Knowledge*. Princeton: Princeton University Press, 1990.

Matsumoto T, Asakura H, Hayashi T. "Biopsychosocial aspects of premenstrual syndrome and premenstrual dysphoric disorder." *Gynecol Endocrinol* 29, no. 1 (Jan 2013): 67-73.

Moos, Rudolf H. "The Development of a Menstrual Distress Questionnaire." *Psychosomatic Medicine*, 1968: 853-867.

Oliver, Myrna. "Katharina Dalton, 87; First Doctor to Define, Treat PMS." *Los Angeles Times*, Sept 28, 2004: 1.

Oudshoorn, Nelly. *Beyond the natural body: an archaeology of sex hormones*. New York: Routledge, 1994.

Knaapen, Loes, Weisz, George. "The biomedical standardization of premenstrual syndrome ." *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39 (2008): 120-134 .

"Points from Letters: Premenstrual Syndrome." *Br Med J* 1, no. 4824 (Jun 1953): 1393.

Reid, R.L. *Premenstrual Syndrome*. 06 30, 2014.
<http://www.ncbi.nlm.nih.gov/books/NBK279045/> (accessed 09 03, 2015).

Richardson, John T. E. "The Premestraul Syndrome: A Brief History." *Soc. Sci. Med.* 41, no. 6 (1995): 761-767.

Roberts, Celia. *Messengers of Sex Hormones, Biomedicine and Feminism*. Cambridge: Cambridge University Press, 2007.

Rosenberg, Charles E., Golden, Janet. *Framing Disease: Studies in Cultural History*. New Brunswick: Rutgers University Press, 1992.

- Rosewarne, Lauren. *Periods in Pop Culture: Menstruation in Film and Television*. Maryland: Lexington Books, 2012.
- Rubel, Diane N. "Premenstrual symptoms: a reinterpretation." *Science*, 1977: 291-2.
- Saeedian Kia,Afsaneh, Amani,Reza, and Cheraghian,Bahman. "The Association between the Risk of Premenstrual Syndrome and Vitamin D, Calcium, and Magnesium Status among University Students: A Case Control Study." *Health Promot Perspect* 5, no. 3 (2015): 225-230.
- Saladin, Kenneth S. "The Female Reproductive System." In *Anatomy & Physiology The Unity of Form and Function*, by Kenneth S. Saladin, 1096. New York: McGraw-Hill Education, 2015.
- Sampson, G. A. "Premenstrual syndrome: A double-blind controlled trial of progesterone and placebo." *British Journal of Psychiatry* 135 (1979): 209-215.
- Sontag, Susan. *Illness as Metaphor and AIDS and Its Metaphors*. New York: Farrar, Straus and Giroux, 1977.
- Staff, Mayo Clinic. *Premenstrual Syndrome (PMS)*. 12 14, 2014. <http://www.mayoclinic.org/diseases-conditions/premenstrual-syndrome/basics/definition/con-20020003>.
- Stevens, JM. "Gynaecology from ancient Egypt: The papyrus Kahun: A translation of the oldest treatise on gynaecology that has survived from the ancient world." *The Medical Journal of Australia* 2 (1975): 949-952.
- Stix, Gary. "Fact or Fiction?: Oxytocin Is the "Love Hormone"." *Scientific American*. 09 08, 2006. <http://www.scientificamerican.com/article/fact-or-fiction-oxytocin-is-the-love-hormone/> (accessed 04 26, 2016).
- Swaby, Rachel. *The Godmother of American Medicine*. April 8, 2015. <http://www.theatlantic.com/technology/archive/2015/04/getting-educated-does-not-make-women-infertile-and-other-discoveries-made-in-the-1880s/389922/> (accessed March 22, 2016).
- Tasca,Cecilia, Rapetti,Mariangela, Carta,Mauro Giovanni, Fadda,Bianca. "Women And Hysteria In The History Of Mental Health." *Clin Pract Epidemiol Ment Health* 8 (2012): 110–119.
- Tata, Jamshed R. "One hundred years of hormones." *EMBO Rep* 6, no. 6 (Jun 2005): 490-496.
- Toufexis, Anastasia. "Coping with Eve's Curse ." *TIME*, July 27, 1981: 59.
- Ussher, Jane M. *Managing the Monstrous Feminine: Regulating the Reproductive Body*. New York: Routledge, 2006.

Ussher, Jane M. "The ongoing silencing of women in families: an analysis and rethinking of premenstrual syndrome and therapy." *Journal of Family Therapy* 25 (2003): 388-405.

Ussher, Jane M., Hunter, Myra, Browne, Susannah J. "Good, bad or dangerous to know: representations of femininity in narrative accounts of PMS." In *Culture in Psychology*, edited by Corinne Squire, 85-96. London: Routledge, 2000.

Varney, Sarah. *Testosterone, The Biggest Men's Health Craze Since Viagra, May Be Risky*. May 27, 2014. <http://www.npr.org/sections/health-shots/2014/04/28/305658501/prescription-testosterone-the-biggest-men-s-health-craze-since-viagra-may-be-risky> (accessed Mar 20, 2016).